



PITTSBURGH *AND* ALLEGHENY



IN THE
CENTENNIAL YEAR.

7765
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AND

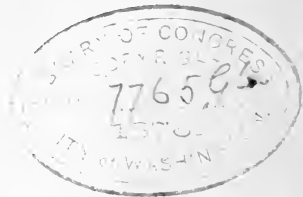
ALLEGHENY

IN THE

CENTENNIAL YEAR.

-BY-

GEORGE H. THURSTON.



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F. 159

PLTS

CHAPTER I.

PEN PICTURES OF PITTSBURGH.

On the 24th day of November, 1753, no human habitation occupied the point of land where Pittsburgh has since arisen. On either side a river, flowing from nearly opposite points of the compass, swept to their junction in a grander river; from whence, in after years, ships, built of trees then growing on the banks of those two streams, sailed without hindrance down over two thousand miles of forest bordered river, to cross the waters of the great southern Gulf, and breast the storms of the oceans beyond.

For the control of this point of land the elder Pitt, and Louis XIV, were already scheming. The Indian trapper, and adventurous scout, the Jesuit gliding along the great rivers in his bark canoe, or traveling, Indian led, over the forest trails, had all brought stories, and told tales, of the wonderful country through which numerous rivers gave facilities for travel and transportation. In these facilities for commerce and transportation the statesmen of France and England saw the substratum of a wonderful empire. Looking to the control of "*La Belle Rivere*," with its head waters but one hundred miles from the great lakes, and three hundred miles of the sea coast as the key to it all, they placed their finger on the map where join the Allegheny and Monongahela as the point of power. From thence along those rivers, and throughout that great country, should of right issue military expeditions, commercial adventures, and the flood of population. How the past approves the acute statesmanship of those rulers; how the present confirms their vision of the great empire.

At this point, on the 24th of November, 1753, probably its only human occupant, stood one who was to wrest from the grasp of European rule the country they coveted, and be the father of the great empire those Trans-Atlantic courts foresaw such wonderful navigation facilities must create, and increase.

Here then stood Washington, the projector of Pittsburgh, in thought if not in actual plan, for he records in his journal at that date—"I think it extremely well situated for a fort, as it has absolute command of both rivers." It is probable, that standing in the bleak November day on this point of land, his mind rapidly overran the future, and saw from the fort he had already projected, "westward the star of empire take its way." Before him rolled the waters of a great river, sweeping to the Mexican Gulf, and giving outlet and egress to the nations of the earth. Behind him was already pressing, despite the hardships of pioneer life, and the dangers of Indian warfare, the power of emigration. Around him rose,

in all its grandeur the primeval forest, and who can say what prophetic thoughts in the warm fancy of the then young man sprung and grew.

"Then here he stood among primeval trees,
Here where the rivers meet he chose the station,
And with unerring eye prophetic sees
This point must be the head of navigation."*

Truth is stranger than fiction, says the adage. In the great city of Pittsburgh, extending for miles around the point where in that November day Washington stood, alone, "and thought the future o'er;" and in the forty millions of people, with all their wealth of farms, factories, mines and cities, to which the business of Pittsburgh has access, by her rivers and her railroads, the reality outswell the ambitious dreams of the elder Pitt, the grasping schemes of the fourteenth Louis, and all Washington's mind foreshadowed when he pronounced Pittsburgh the gate-way to the west. Perusing these lines at the close of the first century of American independence, may not it be confidently said that where all the same primary elements of growth still exist, as they do, within Pittsburgh's control, that in the future her wonderful increase will be repeated, and, in a period of years yet unborn, truth be again cited as stranger than fiction by he who shall then tell the story of Pittsburgh's growth.

On the 17th of February, 1754, less than three months after Washington "chose the station," the fort that he projected, the embryo of Pittsburgh that was to be, saw its birth in the stockade erected by Mr. Trent; and again in less than three months more, on April 24th, the unfinished stockade, commanded by Ensign Ward, with forty men, was surrendered to Captain Contrecoeur, who at once proceeded to erect Fort Duquesne.

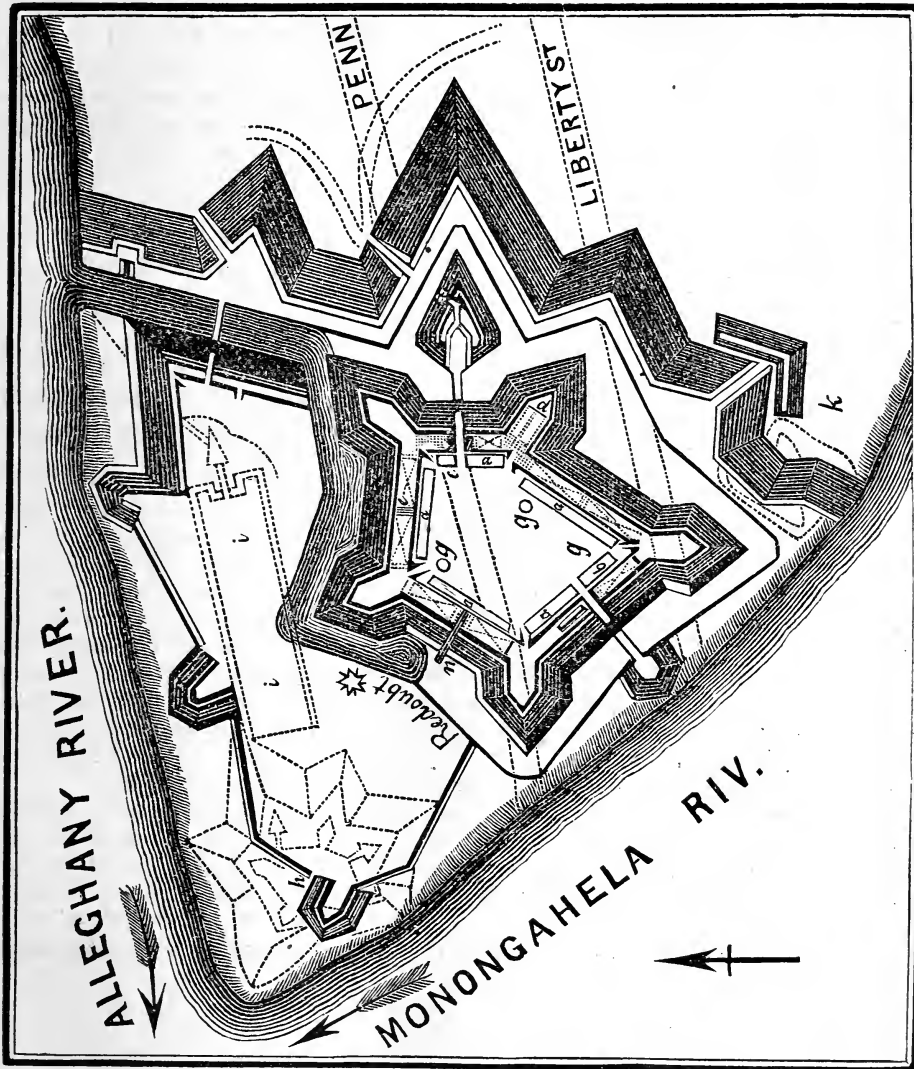
"How changed the scene since by the morning light,
Poor Ensign Ward saw dimly from the high-land
A fleet of perogues with their banner white,
And heard the thrilling war whoop at "Herr's island."

Wrapt in his blanket in the hindmost boat,
De Contrecoeur the motley crews commanded,
Then here the flag of France was first afloat,
Then here for the first time were cannon landed."*

Not long did the flag of France blow out clear and white before the breezes from off the Allegheny. On November 24th, 1758, just five years after Washington had stood at the point and projected the fort, the French, alarmed by the approach of General Forbes, set fire to their magazine, burnt all their improvements, and evacuated the place in boats.

* "Suz-co-tash," by W. H. Denny.

On the 25th of November, 1758, the remains of Fort Pitt were taken possession of by General Forbes. The army was immediately set at work erecting a small military work on the east bank of the Monongahela, and this was the first Fort Pitt, capable of holding two hundred men, from whence arose the name of Pittsburgh, as the settlement was called from the 1st of January, 1759, in the newspapers and letters of the day. In the summer of 1759, General Stanwix arrived and commenced the erection of the second Fort Pitt, which the following engraving shows the plan of and its position to the present streets of the city.



a, Barracks, already built *b*, Commandant's House, not built. *c*, Store House. *d, d*, Powder Magazines. *e*, Casemate, completed. *f*, Store House for Flour, &c. *g*, Wells, in two of which are pumps. *h*, Fort Duquesne. *i, i*, Horn Work, to cover French Barracks. *k*, First Fort Pitt, destroyed. *n*, Sally Port.

This plan is a reduced copy of the draft made by the constructing engineer, Rutzer, in 1761, afterwards given to George the III, and presented by George IV to the British Museum. The Hon. Richard Biddle, during a visit to London in 1830, had a copy made from the original; from which, we presume, was made the engraving we have here copied.

In 1764, Colonel Boquet built a redoubt outside of the fort, on the spot marked with a * in the plan, which is still standing.

The following description of the fort and the village is from a diary kept by one James Kenny, who had a trader's store at the fort in 1761:

11th mo: 19th.—The Fort Banks here is very near raised, which makes it look much stronger than it was in times of more danger; by accounts ye front next ye inhabitants being of brick, and corners of ye angle of hewn stone, about—foot high, ye back part next ye point where ye two rivers meets being of earth, and sodded all so that it grows thick of long grass, that was done last year, and they have mowed ye bank several times this summer; it's four squair with a row of barracks along each squair, three rows of which are wooden frame work, and ye row on ye back side next ye point is brick; also a large brick house built this summer in ye south east corner, ye roof now aputing on, having fine steps at ye door of hewn freestone, a cellar all under it; at ye back of ye barracks opens ye doors of ye magazines, vaults and dungeons: lying under ye great banks of earth thrown out of ye great trenches, all round in these are kept ye stores of ammunition, etc., and prisoners that are to be tried for their lives; in these vaults there is no light, but do they carry lanterns, and on ye south east bastion stands a high poal like a mast and a top mast to hoist ye flag on, which is hoisted on every first day of ye week from about eleven to one o'clock, and on state days, etc.; there are three wells of water walled in ye fort, and a squair of clear ground in ye inside of about two acres.

20th.—I have been informed by a young man that was ordered by ye Commanding officer, Collonel Boquet, (this summer), to number all ye dwelling houses without ye fort, marking ye number on each door; that there was above one hundred houses, but ye highest number I have seen, by better accounts, there is one hundred and fifty houses, to take notice of I think was seventy-eight, these being ye inhabitants of Pittsburg, where two years ago I have seen all ye houses that were without ye little fort, they had then, thrown down, only one, which stands yet, also two that was within that little fort is now standing, being ye hospital now, all ye rest being built since, which if ye place continue to increase near this manner, it must soon be very large, which seems likely to me.

12 mo: 4.—Many of ye inhabitants have hired a schoolmaster, and subscribed above sixty pounds for this year for him, he has about twenty scholars, likewise, ye soberer sort of people seem to long for some public way of worship, so ye schoolmaster, etc., reads ye Litany and Common Prayer on ye first day to a Congregation of different principles, (he being a Prisbiterant,) where they behave very grave, (as I hear) on ye occasion, ye children are brought to Church as they call it.

12 mo: 25th.—A young Indian man brought us four turkeys, saying, that he was recommended by several of his acquaintances to come to ye Quaker who would use him very well, and having bought them and paid him six shillings cash, besides victuals and drink, he going out heard of a better market, so came back and got ye turkeys, delivering ye money again, but his second Chap not pleasing him in dealing, he brought them back to us and had his money again, but he said Dam it several times at ye second Chap."

It was not until 1764 that Pittsburgh began to take form as an embryo city. In that year Col. John Campbell laid out a plan of lots near the fort, which plan is now embraced in four squares of the present city.

Two years after, the Rev. Charles Beaty, under date of September, 1766, mentions Pittsburgh in his journal as "*some kind of a town without the fort.*" When only this curt, disparaging remark is all that is applicable at that time to the embryo city, the inference can only be that the appearance of the little settlement without the fort was anything but suggestive of its future greatness. This inference is strengthened by the record of Arthur Lee in his journal, in 1784, nearly twenty years after, of "I believe the place will never be considerable."

In May, 1769, the survey of the manor of Pittsburgh was completed, and embraced 5,766 acres. Shortly after this time we find, in the journal of George Washington, the next record of the progress of the city of Pittsburgh. Under the date of October, 1770, he being then on his way to the Kanawha to examine and locate lands for himself and others, the following pen and ink picture of Pittsburgh is made by Washington's hand:

"We lodged in what is called the town, distant about 300 yards from the fort.
* * * The houses, which are built of logs and ranged in streets, are on the Monongahela, and I suppose may number twenty, and inhabited by Indian traders."

There appears to be a conflict here between "ye Quaker," James Kenny, from whose journal of 1761 we have just quoted, and Washington, as to the number of houses. James Kenny giving seventy-eight, nine years previous.

In May, 1776, Pittsburgh was a small out-lying or western fort. From its ramparts the Cross of St. George blew out clear and fair before the Spring winds, sweeping breezily up between the two ranges of thickly wooded hills lying on either side of the river, that, hardly a stone's throw from the sally port of the fort, sprung from the junction of the clear Allegheny and darker Monongahela rivers.

On every hand, save where the little village and the few cleared fields around basked in the warm spring sun, the dense forest clothed hill and bottom, ravine and river's edge. Down from the northeast on the one side, swollen with the melting northern snows, came sweeping the clear, bright waters of the Allegheny. From the south, on the other side, glided sullenly to their union with the northern stream, the tawny waters of the Monongahela. Flowing away from the green point stretching from the ramparts of Fort Pitt to the waters' edge, rolled from out the joining waters of the *Alleghawi** and the Monongahela the *La Belle Rivere* of the French, the O-hi-o of the aborigine, to be, in years to come, a highway of commerce, wonderful in its towns and cities and the traffic on its waters.

* A remnant of an Indian tribe has been found in the west with this name, and some think it the proper original name of the Allegheny.

Up into the clear atmosphere wreathed lazily, or swayed fantastically, in the breeze, the pale blue smoke of wood-fires from the two score of houses which formed the village, shadowy forerunners of the dense black columns that were in an hundred years to be shooting up in every direction for miles around the location of the little settlement of 1776. Scantily, here and there, about the doors of the few cabins, or along the one street, grouped cannie Scot and blithe Frenchman, the plucky Englishman, the stolid Indian, and the thin, sinewy native American trader and scout. Before the entrance to the fort the red coated soldier of George the Third paced lazily his monotonous beat, the clank of his musket, and accoutrements, making a faint fore-reaching echo of the clang, and clash, of the machinery that then far down the aisles of time was moving to forge the bar and drive the plane, to smelt the ore, and shape the metal, and wake the echo of over five hundred miles of streets, and render noisy the day and clamorous the night, in a hundred years from then. Thus in May, 1776, sparkling in the sunshine ran the rivers, green and fresh swayed the trees, bright and red waved the banner of England, idly about the fort lounged the representatives of five distinct people, and quietly under the warm May sun rested "*De-un-da-ga*," as by the Seneca Indians this embryo of Pittsburgh was called.

"A hundred years ago what sylvan beauty
Did nature on this almost island crowd,**
Where Traffic now from altars grim and sooty,
Doth overcome us like a winter's cloud." †

In December, 1784,* we find in the journal of Arthur Lee, who had, with Dr. Franklin and Silas Deane, been a Commissioner to the Court of Versailles, the following picture of Pittsburgh at that date. He says: "Pittsburgh is inhabited almost entirely by Scots and Irish, *who live in paltry log houses*." Fresh from the French court the rudeness of a frontier settlement seems to have made no favorable impression on his fastidious tastes. He also writes, "The banks of the Monongahela on the west or opposite side of Pittsburgh are steep, close to the river and about two hundred yards high. About one-third of the way from the top is a vein of coal above one of the rocks. The coal is considered good and is burnt in the town." How astounded would be the ghostly Mr. Lee could he re-visit the scene and see how the coal he so curtly mentions is now burnt in the town, and the acres on acres of it that are floated away. Mr. Lee also writes, "There is a great deal of small trade carried on, goods being brought at the vast expense of forty-five shillings per cwt. from Philadelphia and Baltimore. There are in the

**The site of Pittsburgh was once almost an island from a chain of ponds stretching along its eastern side, where Smithfield street now is. These ponds were at that early period the resort of wild ducks.

†*Suc-co-tash*, by W. H. Denny.

* It was in January, 1784, that the first sale of lots were made by John Penn, Jr., to Isaac Craig and Stephen Bayard. In June, 1784, the laying out of the town was completed.

town four attorneys, two doctors, and not a priest of any persuasion, no church nor chapel. * * * The place I *believe* will never be considerable." Mr. Lee did not evidently, to use a slang phrase of the present day, "take much stock" in the town peopled with Scots and Irish, living in paltry log houses. But works have been better than his faith. As it is after his statement that there are four attorneys and two doctors in the town that he records his belief that the place will never be considerable, it might be the subject of an interesting metaphysical inquiry how far this professional outlook gave rise to his estimate of the future prospect of the town, especially in connection with the almost despairing statement—"and not a priest of any persuasion, no church nor chapel." Certainly this is not a very flattering picture of the embryo city of Pittsburgh. With a population whose characteristic national traits were likely to give full employment to the four attorneys and two doctors, and not a priest of any persuasion to counteract what might be a Darwinian exposition of the survival of the fittest, poor Arthur Lee may perhaps be well excused from not investing in corner lots in this little frontier town of "paltry log houses," containing about four hundred inhabitants. This population we infer from an account given by Dr. Hildreth, of Marietta, who, with a body of New England emigrants, arrived at Pittsburgh on April 3d, 1788, on the "May Flower." Dr. Hildreth, after giving a statement of the starting of the "May Flower" from Robbstown—now known as West Newton—the passage down the Monongahela, and the arrival at Pittsburgh, says: "Pittsburgh then contained four or five hundred inhabitants, several retail stores, and a small garrison of troops was kept in old Fort Pitt. To our travelers who had lately seen nothing but trees and rocks, with here and there a solitary hut, it seemed quite a large town. The houses are chiefly built of logs, but now and then one had assumed the appearance of neatness and comfort."

Niles Register, vol. 30, page 436, says, "that Pittsburgh in 1786 contained thirty-six log houses, one stone, one frame, and five small stores.* At this date the first newspaper west of the Allegheny Mountains was established. The first number of the *Pittsburgh Gazette* being issued on the 29th of July, 1786. Still printed, ably edited and prosperous, the *Gazette* is rapidly nearing its Centennial, but we doubt if its present proprietors, or any of the fraternity in the present day, would venture on starting a newspaper in a community of thirty-six log houses with five retail stores, where there was no regular mail route, and the country around as thinly settled as the town.

In 1789 we find the following description of Pittsburgh in a rare volume entitled "An Historical Review of North America, printed at Dublin, Ireland, 1789," Says the author of the volume: "Pittsburgh is a neat, handsome town, containing about four hundred houses; it is situated at the confluence of the Allegheny and Monongahela rivers. *It is expected this town will in a few years become the emporium of the western country.*" The italics are given to mark the difference

*In January, 1788, provisions were very scarce, and flour rose to sixteen dollars a barrel; and in January, 1779, bacon was one dollar per pound.

in opinion between Arthur Lee in 1784 and the writer of the volume just quoted, five years later.

There seems to have been considerable difference in the statements of various authorities at that time as to the population of the town, and the number of houses it contained. A communication from Judge Breckenridge published in the first number of the *Gazette*, on the situation of the town of Pittsburgh, says: "The town consists at present of about an hundred houses with buildings appurtenant. More are daily added, and for some time past it has improved with an equal but continual pace. The inhabitants, men, women and children, are about fifteen hundred." Mr. Breckenridge has either made some mistake in the estimate of the population or they stowed close, for his estimate gives fifteen persons to each house. As Niles' Register, quoted before, gives less than half the number of houses stated by Judge Breckenridge and Dr. Hildredth two years later, says "Pittsburgh then contained four or five hundred inhabitants," and a census made of the borough in 1796, and published in the *Gazette* of January 9th, of that year, states the population, ten years after Judge Breckenridge's statement, at only *one thousand three hundred and ninety-five*, it is probable that the Niles Register record of houses, in 1786, is correct, and that the population at that period, ninety years ago, was about four or five hundred. There was no mail carried to Pittsburgh at the time the *Pittsburgh Gazette* was first established, all correspondence of any nature being carried by travelers or a special express. In September, of 1786, an order was made by Government to establish a post between Philadelphia and Pittsburgh, but on the 1st of October, 1790,—four years after the establishment of the mail—the postage for the preceding year was only one hundred and ten dollars and ninety-nine cents.

On the 22d of April, 1794, Pittsburgh was incorporated as a borough. In 1800 the census gives Pittsburgh 1,565 inhabitants. Turning from the vision of Washington, standing, in 1753, on the uninhabited point of land where Pittsburgh since grew from the Fort Pitt of 1761, and the rude frontier village of Pittsburgh in 1776, we pass an hundred years, and the great city of Pittsburgh in 1876 rises in all its proportions, wealth and business, before us.

One hundred years! what wonderous records they contain of change and progress. In them have had birth and growth the steamboat, the railroad, and the electric telegraph. It was from Pittsburgh the first steamboat, the "New Orleans," sailed upon the western waters. It was from Pittsburgh the first western railroad, the Ohio & Pennsylvania, reached its iron arms to grapple the growing commerce of the West, and it was from Pittsburgh the first line of telegraph was built to the West.

In that eventful century the American colonies of Great Britain passed from the appanage of a crown into a mighty nation. Where, in May, 1776, the flag of St. George waved redly over the slight fort, around which gathered the little frontier village of an hundred persons, stands, in May, 1876, a world known city

of two hundred thousand people, from the tops of whose furnaces wave red banners of flame, the glowing standards of American industry.

Where, in May, 1776, a little village stood on the verge of civilization, peering timidly into the forest beyond, in May, 1876, a great city stands, midway between an empire of population on the east and empire of population on the west. Twenty millions to the east of her, twenty millions to the west of her, while the electric telegraph, the railroad, and the steamboat, connect her with the world and its commerce.

Throughout the nation, of which this city is such a central point, iron from its mills is found in every mart, its steel in the agricultural implements on every farm, and crowding from off the dealer's shelves the cutlery of Europe. Its glass is on the table of every hotel, and in the windows alike of city residence and frontier cottage. The smoke of its coal floats in the air from the Gulf of Mexico throughout the length of the Mississippi, and speeding across the country, glimpses are caught of it darkening the sky of little towns, that flit away behind the fleet locomotive, that can, and does, perhaps, claim Pittsburgh construction. As the train in the closing twilight rushes past cottage, village, and town, the bright light of its famed Petroleum is seen making brilliant with the evening lamp thousands of homes. Even on the hull of the staunch ship rolling with the swelling waves of the broad ocean the glitter of Pittsburgh's copper glints in the sunshine as she lifts with the heaving wave, or is seen beautifying and brightening the machinery of the modern steamer, whether on our inland rivers, our great lakes, or grander ocean.

Standing a sooty giant athwart the head waters of the Ohio;—glowing with the blaze of hundreds of furnace fires,—swart and grimy with their smoke, Pittsburgh may well be proud of her past, and look with great hope to her future. Planted on one of the grandest fuel fields of the world, she has wonderful facilities for receiving crude minerals and other material, for the world's needs and consumptions in their manufactured forms. Equally able to distribute them, to consumers, with the grasp upon the supply trade of this country faintly outlined in the foregoing paragraph, what, if her people fail not to keep and cultivate the advantages and powers their position gives them, may not Pittsburgh be in the future under the same industries? Her past foretells that future, and predicts her growth, which, in years gone by, the pages of this volume show.

In May, 1776, a little village of a few houses, clustering around a small fort, Pittsburgh and Allegheny cities, in May, 1876, is a great community, occupying an area of 22,000 acres, having 500 miles of streets, with more wards than a hundred years ago it had houses. The Monongahela river and the Allegheny, which in May, 1776, swept through miles of primitive forest before they intermingled their waters, now, in May, 1876, flow each through from six to eight miles of city, with its massive blocks of houses, its miles of paved and gas-lighted streets.

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Where, in 1776, a solitary Indian canoe or skiff here or there, crossing from the little village to the forest on the other side, formed the connection, now ten grand bridges span the waters of the rivers, and are but as sections of the streets that extend for miles from their either ends. Where, as late as 1784, it is recorded of the town there was "no church nor chapel, no priest of any persuasion," there are in 1876 over one hundred and ninety churches, from whence arise praise and prayer to Him who holds the destinies of nations in His hands, and has not forgotten Pittsburgh in the blessing which fall alike upon the just and the unjust.

As no showing of Pittsburgh has, from its peculiar topographical configuration, presented or can fully picture the city, so is it equally difficult for the pen to give its portraiture in 1876. Built along the valleys of the two rivers, upon the hill sides, up the ravines, and on the plain lying behind the ranges of hills that border the Monongahela and Allegheny, no artist's sketch can present its beauty or its picturesque views; neither can the pen bring before the mind's eye of the reader its beautiful residences, the broad well-paved streets that for miles and miles lie out of sight from the casual business visitor or the passing tourist.

The traveler, simply passing through Pittsburgh, sees things under such a gloom of smoke, that the beauty of the city outside of its business area is generally unknown. The traveler approaching Pittsburgh from the East on the Pennsylvania Railroad hardly suspects that the beautiful park-like country through which he is passing, dotted thick with attractive residences, picturesque grounds, and broad paved roads, over which the bright sunshine showers down and clear blue skies bend, is part of the famous "Smoky city," a portion of the great metal factory of the United States. Just as some chance remark conveys the idea that for nearly twenty minutes he has been riding at rapid railroad speed through miles of Pittsburgh's fairest wards, he enters upon a region of smoke and fire, and for two miles or more rides under canopies of smoke, past furnace and mill, coke ovens and factories, to be, after a brief pause in the spacious Union Depot of the Pennsylvania Railroad, drawn into the bowels of the earth, to travel entirely from one side of the city to the other under its houses and streets. Emerging on the Monongahela river side of the city, he still pursues his course amid fire and smoke, past glass houses, steel works, rolling mills and foundries, for some two or three miles, to again pass into a land of sunshine and clear skies, where still the houses of Pittsburgh merchants and manufacturers dot the landscape and beautify the scenery. The ear has been so stunned by the whistle of the escaping steam, the clank of machinery, the din of metallic reverberation, and the roar of forges in all directions; that as the eye is prevented from comprehending any of the landscape surroundings, the mind is equally confused in obtaining any definite comprehension of the scope of its manufactures. The travelers pass from under its clouds of smoke and beyond its ear distracting and peculiar noise with the one distinct idea that its manufactures must be great, and with a feeling of curiosity to explore the mysteries of its workshops.

They have caught glimpses as they passed of half naked men throwing about in savage play huge masses of molten metal; they have seen for a moment the interiors of great cavernous buildings, where stalwart, sooty men, were pulling and hauling, and dragging about long bars of glowing metal which went twirling and slipping like fiery snakes through rapidly revolving cylinders; they have caught glimpses of streams of molten metal pouring like burning water through gathered groups of workmen; they have heard strange, demoniacal yells and shrieks, passed clouds of scalding vapor, glided for miles by sombre house, black discolored churches and gloomy warehouses. They recede from its boundaries with an impression that they have passed through some city half enchanted, such as Marco Polo and other old Venitian travelers, fabled to have found in the then unexplored regions of the earth, a city of fire and smoke.

And such is Pittsburgh in 1876 to the passing traveler as he enters it by either of the railroads that centres in the city. To the tourist who may spare the time to explore Pittsburgh there is, beside that region of fire and smoke, sections of calm delight, districts of great picturesque beauty.*

It needs but the tourist, in the budding month of May, or in sunny June, or golden September, or russet October, to drive a foot pace through the famous once East Liberty valley, now comprising some of the wards of Pittsburgh to see the city aright. Broad, well-paved avenues stretch for miles throughout its space. Perched on jutting hill, or nestled in beautiful valleys or resting fairly on level plateaus, costly residences and charming cottages attract the eye on every side. Beautiful grounds, rich with cultivated shrubbery, or picturesque with natural forest trees, charm the sight; and the whole impression is of driving through a beautiful park, within which elegant residences have been, by permission, built. Here and there a massive and costly church sends its towering spire up into the clear, sunshiny sky, while no din of machinery disturbs the sylvan quiet of the scene, or shadow of smoke glooms the view. If the business portion of Pittsburgh is a city, half enchanted, of fire and smoke, inhabited by demons playing with fire, this section of Pittsburgh is also under enchantment of a different kind, and smiles a land of beauty, brightness and quiet. The one section might be a picture by Tintoretto, and the other by Claude Lorraine.

In the long summer twilights, a ride out Penn and Fifth avenues, through Hiland and Ellsworth avenues, and other of the beautiful wide streets, where rows of gas lights stretch on either hand for miles, with the windows of the houses brightening in gradual illumination through the gathering darkness, while

*Sir Henry Holland, who was of the Prince of Wales' suite, when he visited Pittsburgh, remarked at that time to Josiah King, Esq., one of the committee of reception, that he had, in 1845, spent a week in an equestrian exploration of the suburbs of Pittsburgh; that he had traveled through all the degrees of the earth's longitude, and had not elsewhere found any scenery so diversified, picturesque and beautiful as that around Pittsburgh, and likened it to a vast panorama from which, as he rode along, the curtain was dropping behind and rising before him, revealing new beauties continually.

the perfume of flowers and the fresh foliage fills the air, renders it a drive without its parallell, perhaps, in this country. There is no city which has such a drive, where all the quiet of the county, all the beauty of cultivated suburbs, and the architecture and conveniences of a city combine.

Passing to the north side of the Allegheny river, the tourist again finds himself outside of the din of machinery and the blurr of smoke, and driving around the Parks of Allegheny city enjoys a view of a well built city of notable residences of much beauty, or riding for miles through paved streets finds row after row of neat houses unclouded by smoke, and void of annoyance from the noise of factories.

Pittsburgh proper, of the old city, and the South Side, is where the fires of the factories glow brightest, and the smoke rolls up blackest. This is the part most seen by travelers; and has its beauties as well as the other sections spoken of. There is no more impressive sight than at the junction of Fulton and Cliff streets of a clear night, when a strong wind has swept away the volumes of smoke from the city. Close on the left hand rises grey and grand the beautiful High School; below it the basin of the water works shimmer in the light. In front lies the city of Allegheny with its miles of streets, marked clear and distinct by the rows of glittering gas lights. Away up to the right stretches the Allegheny river, on whose either side for three or four miles street lights shine brightly; along whose line forge fires, furnace blaze and factory flames, are reflected back from the river shining blue and sparking in the moonlight. Clear and bright on the left centre lies the Ohio, "*La Belle Rivere*," with perhaps a white steamboat gliding past, with its tall chimneys sending out showers of sparks, a very star spangled banner. To the right, to the left, and in front of the spectator, furnaces are throwing up columns of flame. Through the wide open doors and windows of factories and mills illuminations of their interiors from their forge fires, the glow of flowing metal and twisting red hot bars of iron throwing off scales of fire under the pressure of machinery, presents a picture the spectator will not soon forget. The tourist standing thus, nearly three hundred feet above the Allegheny, with the night bringing out every forge fire and furnace blaze, with the clank of the machinery rising through the air, and the roar of the furnaces echoing from the hills, will feel this "HYMN OF PITTSBURGH," which one of her poets, COL. RICHARD REALF, has so admirably rendered in words that thrill with the very spirit of Pittsburgh's forges and furnaces:

My father was mighty Vulcan,
 I am Smith of the land and sea;
 The cunning spirit of Tubal Cain
 Came with my marrow to me.
 I think great thoughts strong-winged with steel,
 I coin vast iron acts;
 And weld the impalpable dreams of Seers
 Into utile lyric facts.

I am monarch of all the forges,
I have solved the riddle of fire;
The Amen of Nature to need of Man
Echoes at my desire.
I search with the subtle soul of flame
The heart of the rocky earth,
And hot from my anvils the prophecies
Of the miracle-years blaze forth.

I am swart with the soot of my chimneys,
I drip with the sweats of toil;
I quell and scepter the savage wastes,
And charm the curse from the soil.
I fling the bridges across the gulfs
That hold us from the To Be,
And build the roads for the bannered march
Of crowned Humanity.

The beauties of Pittsburgh sketched in the foregoing paragraphs travelers rarely see, nor many of her own citizens, from want of knowledge of where and when to see. There are a dozen other points around the city where the scenery by day or night is beautiful, but they may not all be presented even by pen and ink. Enough has been given of "pen and ink pictures of Pittsburgh" to show what it was an hundred years ago, and to present some idea of what it is in the Centennial year, leaving the succeeding chapters to portray its growth, present its business, tell the story of its industries, suggest its advantages, and foreshadow its future.

CHAPTER II.

THE MILITARY RECORD OF PITTSBURGH.

Originating as a military out-post, Pittsburgh has carried the color of military prestige through all her career. In earlier days her frontier character naturally rendered her the centering point of Colonial military movements, as did her situation at the head of a stretch of navigable streams. In after days her facilities for furnishing munitions of war, and her ability as a metal factory, still gave her mark in the military movements of the time, while in the rebellion, Pittsburgh became almost a national armory and military camp. The constant marching and re-marching of troops through the city; the rendezvous it was for the volunteers and drafted men of Western Pennsylvania; the shipment of munitions of war gave at all times a military aspect to the streets and the suburbs. A full detailed history of the military events transpiring in and around Pittsburgh would require a larger volume than this to contain the facts and the papers; and this chapter is merely designed to present briefly the leading events, more as an index than a history.

The construction of the stockade by Capt. Trent, alluded to in the previous chapter, may be cited as the initiatory date of the military history of Pittsburgh. The expedition of Monsieur De Contrecoeur, in 1754, with sixty batteaux, three thousand canoes, eighteen pieces of cannon, and one thousand French and Indian troops, was the first military movement transpiring at this locality, and was the first overt act of hostility of the memorable French and Indian war of 1754-58.

The expedition of the French commander De Villier, from Fort Duquesne, against Gen'l Washington at Fort Necessity, on July 3d, 1754, may be given as the second actual military movement of which Pittsburgh was the pivotal point; while the defeat of Braddock on the 9th of July, 1755, stands third in the list of military events which are a part of the city's history.

Thus, amidst the contentions of two great European nations to secure the point of land where Pittsburgh stands, the embryo of a future city was formed, and Fort Duquesne passed into history, and became a familiar word in courts and camps, to become yet more familiar as Fort Pitt, and still more famous as Pittsburgh.

The expedition of Gen'l Forbes in 1758, against Fort Duquesne, comes next in the events that belong to the military history of Pittsburgh; and the attack

PLAN OF FORT
DUQUESNE,

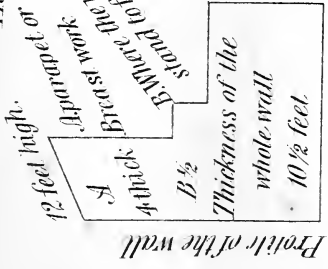
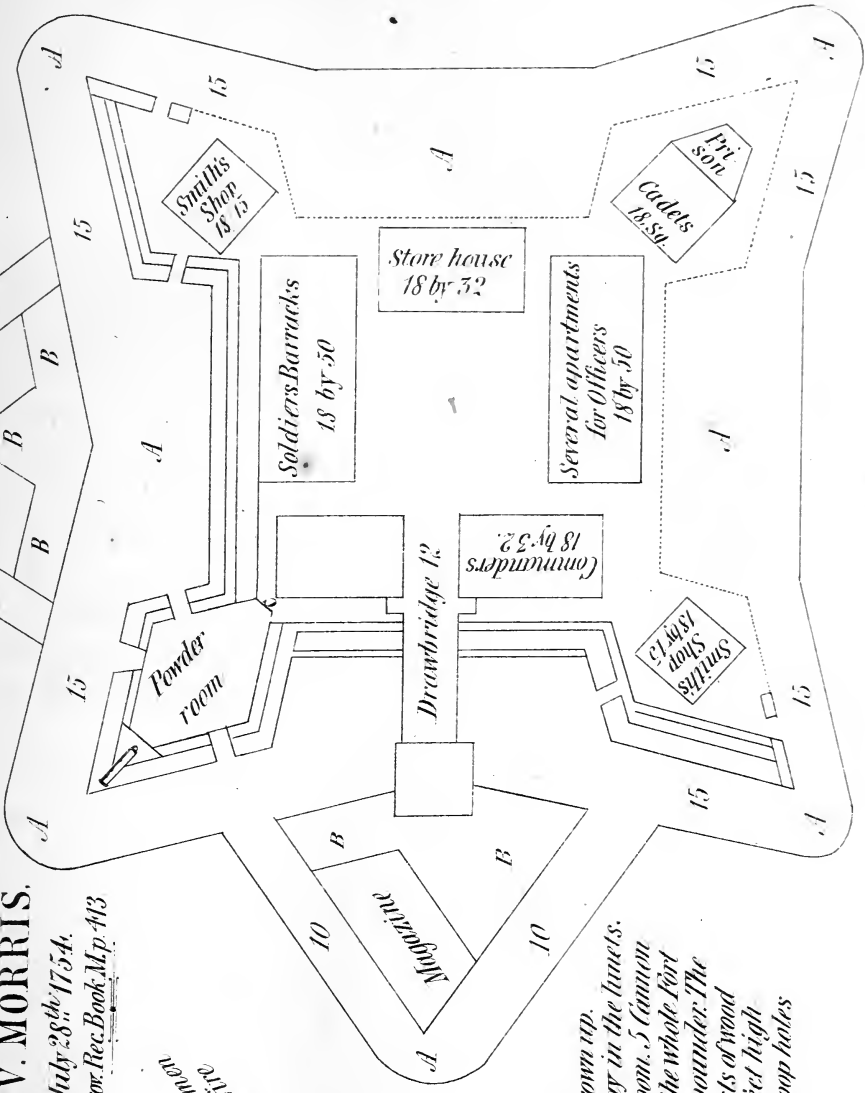
Erected by the French, 1754,
accompanying Capt STOBBS's letter to

GOV. MORRIS.

Amesbury & Co. Lith. Pittsburgh.

July 28th 1754.

Penn. Rec. Book, M. p. 413



- A. Ditch a breastwork thrown up.
- B. The earth not dug away in the lunets.
- C. Entrance of the Powder room. 5 Cannon mounted on this bastion, the whole fort Scannon, 4 of which 3 pounder. The dotted line represents posts of wood drove in the ground 12 feet high mortised together with loop holes for small arms.

(own fields of a quarter of a mile round)

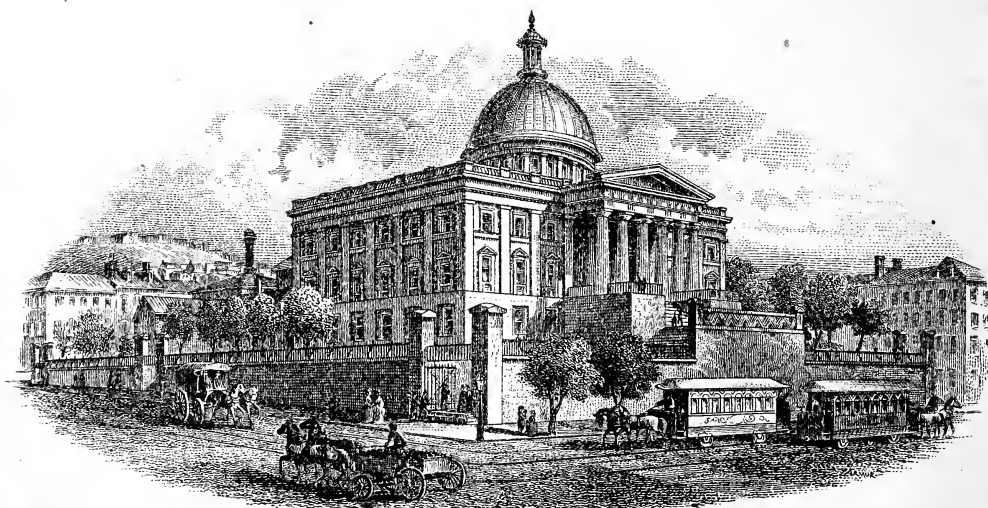
Woods

Gardens



Armor, Feurhake & Co. Lith.

CITY HALL, PITTSBURGH.



Armor, Feurhake & Co. Lith.

COURT HOUSE, PITTSBURGH.

of a portion of Gen'l Forbes' forces under Major Grant on the 14th of September, 1758, is another battle scene in the military tableaux that illustrate the city's birth. The first actual conflict upon the area, where the city now stands, gave title to a locality known as Grant's Hill, which, until about the year 1840, retained, to a great extent, its original configuration and elevation, and its summit was the site of the reservoir for the water supply of the city. In after years the hill was gradually graded away, and although a rising grade of the streets that intersect the locality indicate ascending ground, nothing remains to mark the hill where, in the early gray September morning,

"The Highlander with kilt and naked knee
Sent down his challenge to the sleeping fort,
And waked them with his pipe and reveille."

This attack of Maj. Grant is characterized by Gen'l Washington in a letter to the Governor of Virginia as "a very ill-conceived, or very ill-executed plan, perhaps both; but it seems to be generally acknowledged that Maj. Grant exceeded his orders."

It was eleven o'clock at night when Major Grant appeared with his troops on the brow of the hill, about a quarter of a mile from the fort.

In the morning four hundred men were posted along the hill, facing the fort, to cover the retreat of a company under Captain McDonald, who marched with drums beating toward the enemy, Major Grant believing there was but a small force in the fort. The garrison, who seemed to have kept an apparently sleepy watch, was aroused by the music, and sallied out in great numbers, of both French and Indians. This force, accounts say, was separated into three divisions, two of which were sent, under cover of the banks of the two rivers, to surround the force of Major Grant, while the third delayed a while to give the others time, and then displayed themselves before the fort as if exhibiting their whole strength. The attack then began, and Captain McDonald, with his one company, was immediately obliged to fall back on the main body under Major Grant, who at the same moment found himself suddenly flanked on all sides by the detachments of the enemy moving from the banks of the river. The struggle became desperate. The provincial troops, as at Braddocks, at once covered themselves behind trees, and made a good defence; but the Highlanders stood exposed to the fire without cover, and fell in great numbers, and at last gave way and fled. Major Lewis, who had been posted in the rear with two hundred men, principally American regulars and Virginia volunteers, with the baggage, hastened forward to the support of Grant, but soon found himself flanked on both sides. The work of death went on rapidly, and in a manner quite novel to the Highlanders, who in all their European wars had never before seen men's heads skinned; they gave way, and the rout of the troops became general.* A number of the men were

*It is recorded as one of the incidents of this rout, that as Major Lewis was advancing with his men he met a Scotch Highlander under full flight, and on inquiring of him how the battle was

driven into the river and drowned, and Major Lewis was taken prisoner.† Major Grant retreated to the baggage, where Captain Bullet, with fifty Virginians, endeavored to rally the flying soldiers. As soon as the enemy came up Captain Bullet attacked them with great fury; but being unsupported, and most of his men killed, was obliged to retreat. Major Grant and Captain Bullet were the last to desert the field. They separated, and Major Grant was taken prisoner.‡ It is not without interest in this connection to state that the point at which Grant was captured was at what is now the corner of Wood street and Third avenue, where the St. Charles Hotel now stands.

The abandonment of Fort Duquesne by the French on the 24th of November, and its occupation by General Forbes on the 25th, are the two next scenes at this eventful spot. A plan of the fort as it then existed is not without interest in this connection; the one given is from the drawing sent to Governor Morris, of Pennsylvania, by Captain Robert Strobo, who, with Captain Van Braam, had been sent to Fort Duquesne on the surrender of Fort Necessity as a hostage. In his letter dated July 28, 1754, which gives a full account of the forces in the fort and other valuable information of a military nature, he says: "I send this by Monccatootha's brother-in-law, a worthy fellow and may be trusted. On the other side you have a draught of the Fort, such as time and opportunity would admit of at this time;" and urging that no time be lost in capturing the fort, uses this language:

going, the panic stricken soldier replied: they were "a' beaten, and he had seen Donald McDonald up to his hunkers in mud, and a' the skin off his heed." This would indicate that the Highlanders had reached or were passing the point or base of the hill, at the present line of Smithfield street, between Fifth avenue and Third avenue, as a series of ponds or stretch of swamp skirted the base of Grant's hill just here, and it was probably in passing through this swampy portion of the ground that poor Donald McDonald sunk up to "his hunkers in mud" and lost the "skin off his heed," and it is probable that he was the Captain McDonald who led his one company with drums beating down the face of the hill as if on parade.

†This officer is the celebrated General Andrew Lewis of the Indian war of 1774, commonly called Lord Dunmore's war. He was the companion of Washington in the campaign of Braddock, and was a captain in the detachment that fought at Fort Necessity, and it is stated that Washington's opinion of Lewis' military abilities was so great that when the chief command of the revolutionary armies was tendered to him, that he recommended it should rather be given to General Lewis. Stuart, in his *Historical Memoirs*, says, "General Lewis was upwards of six feet high, of uncommon strength and agility, and his form of the most exact symmetry. He had a stern and invincible countenance, and was of a reserved and distant deportment, which rendered his presence more awful than engaging.

‡This is the same Col. Grant who, in 1775, on the floor of the British Parliament, said that he had often acted in the same service with the Americans; that he knew them well, and from that knowledge ventured to predict "that they would never dare face an English army, as being destitute of every requisite to good soldiers."

While Grant and Lewis were detained as prisoners at Fort Duquesne, Grant addressed a letter to General Forbes, attributing their defeat to Lewis. This letter being inspected by the French, who knew the falsehood of the charge, they handed it to Lewis. He waited upon Grant and challenged him; upon his refusal to fight he spat in his face in the presence of the French officers, and left him to reflect upon his baseness.

"When we engaged to serve the country it was expected we would do it with our lives;—let them not be disappointed, consider the good of the expedition without the least regard to us."

The disinterested bravery and self-devotion evinced in this request of Stobo's, who sent the plan and instructions to his countrymen at the risk of his life, is not to be expressed in words, and adds more honor to the annals of Pittsburgh than it is possible any mention of the fact could add to the halo of pure patriotism with which this act and request surrounds his name.

It was in the summer of 1759 that General Stanwix, who succeeded General Forbes, on his death, proceeded to Fort Duquesne and began building Fort Pitt. This fortification was, when finished, supposed to be strong enough to secure the British Empire on the Ohio to the latest posterity. An extract from a letter dated September 24, 1759, printed in the *American Magazine* published at Wood-ridge, N. J., says: "It is nearly a month since the army has been employed in erecting a most formidable fortification, such an one as will to latest posterity secure the British Empire on the Ohio." *L'homme propose, et Dieu dispose.*

From the occupation of the ruins of Fort Duquesne, for some three years after, frequent Indian conferences were held at Fort Pitt, at which the various Indian tribes, headed by noted chiefs, assembled in all their savage grandeur, to meet the English commanders.

First among those conferences, and a little time before the evacuation of the fort by the French, is that of Christian Frederick Post, an unassuming German, a Moravian missionary, who was persuaded to carry a message to the western Indians, in order to prevail on them to withdraw from the French.

"Type and forerunner of that German race,
Which since o'erspread the forest of the west,
Which scatters sheaves and flowers on its face,
And plucks ungente passions from the breast."*

On the 24th of July, 1758, he arrived in sight of Fort Duquesne, and held a talk with the chiefs of the Delawares, Shawnees and Mingos. Those talks continued until September 2d, and under date of 26th he records in his journal: "The Indians have agreed to draw back." In his journal the simple faith of the Moravian breaks out from time to time. On September 7, he writes: "It is a troublesome cross and a heavy yoke to draw this people; they can punish and squeeze a body's heart to the uttermost; the Lord knows how they have been counselling about my life; but they did not know who was my protector and deliverer. I believe the Lord has been too strong against them." And on his return he says: "The Lord has preserved me through all the dangers and difficulties that I have been under; He directed me according to His will by His holy Spirit; I had no one to converse with but Him."

*Suc-co-tash.

On December 4, 1758, the chiefs of the Delawares held conference with Col. Boquet, and on January 4, 1759, nine chiefs of the Six Nations, Shawnees. and Delawares, sought and held a conference with Col. Hugh Mercer. On July 4, 1758, a conference, which extended to July 11, with some adjournments, was held by George Croghan, Esq., supply agent to the then Sir William Johnson, Bart., with the chiefs and warriors of the Six Nations; Delawares, Shawnees and Wyandots, who represented eight nations; Ottawas, Chipawas, Putewatimes, Twightwees, Cuscuskees, Kicapoots, Shockeyes and Musquakes. On October 25, 1759, Gen'l Stanwix held another conference with the same tribes.

In the famous Pontiac war of 1763, although its principal seat was in the region of Detroit, yet Fort Pitt was still a point of mark and of attempted capture. The Indians surrounded the fort and cut off all communication with it. They posted themselves under the banks of both rivers, and continued there from day to day with great patience, pouring in showers of fire, arrows and musketry, hoping by famine, fire, or by harrassing the garrison, to carry the works. Fort Pitt remained in a critical situation until after August 5, 1763, when General Boquet, who had been sent to the relief of the fort, signally defeated a body of 400 Indians at Bushy run, a tributary of Bush run, a branch of Turtle creek, in Hempfield township, Westmoreland county, 21 miles from Pittsburgh. The Indians had 60 killed, and the English 50, also 60 wounded.

It was about one o'clock in the afternoon of August 5th that the troops were suddenly attacked by the Indians. The engagement ended only with the day. At the first dawn of light the Indians showed themselves, and began the attack. The English, unable to leave their convoy and wounded, could not move; many of their horses were lost, and the drivers had hid themselves through fear. The situation became critical; the English were literally besieged rather than engaged. The fate of Braddock was before their eyes. To turn the condition of the positions, Col. Boquet contrived the following stratagem. The troops were posted from the preceding night on an eminence, and formed a circle around their convoy. Directions were given to two companies, which had been posted in the more advanced position, to fall within the circle, while the troops to the right and left should open their files and fill up the vacant space as if covering their retreat. A company of light infantry, with one of grenadiers, were ordered to lie in ambuscade to support the two first companies of grenadiers, who moved on in feigned retreat, and were designed to begin the real attack.

The Indians fell into the snare. Advancing with the greatest bravery, they galled the English with a heavy fire; but when certain of success, the two first companies took a sudden turn, and sallying out from a point of the hill, fell furiously on their right flank. The Indians, although disappointed, resolutely resisted; but on the second charge they fled. As they ran, the two companies which had been ordered to support the first rose from ambuscade and gave them their full fire; the four companies then united and pressed the Indians until they were totally dispersed.

Although the Indians, stricken with terror at this defeat, abandoned their haunts east of the Muskingum, it was only to prepare themselves for a renewal of hostilities the succeeding spring, the result of which was the gathering again of troops at Fort Pitt, in the autumn of 1764, for the expedition of Colonel Boquet against the Delawares, Shawnees, Mingoes, Mohicans and other nations in Ohio, between the Ohio river and the lakes. This expedition departed from Fort Pitt on the 3d of October. Their course was along the level ground which is now the First and Sixth wards of Allegheny to the narrows, and then along the beach to Beaver creek, and thence to Tuscarawas, near the forks of the Muskingum. This expedition resulted in compelling the tribes against whom it was sent to relinquish all their prisoners, who were first brought to Fort Pitt, and thence taken to Carlisle.

In the spring of 1765, Fort Pitt was again the scene of a grand Indian conference with Geo. Croghan, Esq., Deputy Agent for Indian affairs. On the 9th of May of that year the chiefs of the Shawnees, Delawares, Senecas, Munsies and Sandusky Indians, accompanied by five hundred warriors, beside their women and children, assembled at the fort.

On April 26, 1768, the principal chiefs and warriors of the Six Nations, Delawares, Shawnees, Munsies and Mohicans, to the number of 1,103, beside their women and children, once more assembled at Fort Pitt to confer with Col. Croghan.

On October 19, 1770, Washington again visited Fort Pitt, on a tour down the Ohio, for the purpose of viewing lands to be appropriated among the officers and soldiers who served in the French war; and on the 21st of November, he was again at Fort Pitt on his return home, and spent all of the 22d of November there.

For a period after this there was a cessation of prominent military events in and around Fort Pitt; in fact, Indian hostilities had almost entirely ceased, and the peace lasted until 1774, when the Indian war called Lord Dunmore's war began. Although Fort Pitt was at this date, more or less, a point of supply and rendezvous, yet no marked event occurred there.*

In 1778, a small force of regular troops under Gen'l McIntosh, sent by the general government for the defence of the western frontier, rendezvoused at Pittsburgh. The general with a small body of men, composed partly of regulars and partly of militia, descended the Ohio from Fort Pitt to the mouth of Beaver creek, and built Fort McIntosh, on the present site of the town of Beaver.

*It was during this year that Lord Dunmore, Governor of Virginia, set up the pretension that the Western boundary of Pennsylvania did not include Pittsburgh and the Monongahela river. He took possession of Fort Pitt by his agent, Dr. Connelly, on the withdrawal of the royal troops by order of Gen'l Gage. The fort seems to have been in a dismantled condition at this time, as in a letter written by Devereux Smith, at Pittsburgh, June 10, 1776, describing the acts of Connelly, is this sentence: "Connelly has embodied upwards of one hundred men, and will have this fort in good order in a short time." At this same time a deputation of the Six Nations had a conference with this Dr. Connelly, as Lord Dunmore's representative, in respect to the murders committed by Cresap and Greathouse, which led to the war of 1774.

On the 27th of November, 1792, Pittsburgh witnessed the departure of Gen'l Wayne's—Mad. Anthony—expedition to the North-west territory. All through the previous summer Fort Pitt had been a camp of instruction. Gen'l Wayne using energetic measures to put his troops in the best possible discipline for efficient services. After leaving Fort Pitt, Gen'l Wayne encamped for the winter at a point seven miles above the mouth of Beaver river. This place was strongly fortified, and called Legionville. The result of Wayne's expedition belongs to the military history of the North-western territory rather than Pittsburgh, which was simply the point of organization of the troops. After this the Indian conferences, with all their panoramic parade in and around Fort Pitt, entirely ceased.

In the years 1791–4 Pittsburgh was the scene of the celebrated Whisky Insurrection. In 1756 the Province of Pennsylvania laid an excise on whisky to sustain its credit. This law was to continue ten years. During the revolution the law was generally evaded in the west; but when the debts of the revolution began to press upon the State, a more vigilant enforcement of the law was attempted. Opposition at once arose, and liberty poles were erected in the western counties. The settlers of those localities, descended from the people of North Britain and Ireland, had many of them brought their hatred of an excise man from the old country. In that day drinking whisky was as common and honorable as eating bread. The cause of the American Revolution had been an excise law, and the people supposed they were only following the example whose results they had lately fought out. The State law was repealed; but Congress in 1791 passed an act laying four pence per gallon on all distilled spirits. The passage of the act was opposed by representatives from the western counties of Pennsylvania, among whom was Albert Gallatin, representing Fayette county, who with others on their return openly and loudly disapproved of the law. The first public meeting in opposition was held at Redstone Old Fort, (now Brownsville,) on July 27, 1791. On September 7 delegates from the four counties met at Pittsburgh and passed resolutions against the law. On the 6th of September a party waylaid a collector for Allegheny and Washington, and tarred and feathered him. In October a person of weak intellect, named Wilson, who affected to be an excise man, was tarred and feathered and burned with hot irons. On the 15th of September the President issued a proclamation enjoining all persons to submit to the law and desist from unlawful proceedings. In April, 1793, a party in disguise attacked at night the house of Benj. Wells, a collector of Fayette county. On the 22d of November they again attacked his house and compelled him to surrender his commission and books, and to resign his office. In July, 1794, many other outrages were committed, houses and stills burned. Also in June several serious riots occurred, in which collectors of excise were maltreated in various ways. During these turmoils a term had come into popular use, to designate the opponents to the excise laws, who were called *Tom Tinkers* men. The first application of the term is stated to have originated at the destruction of a

still, which was cut to pieces. This was humorously called mending the still, and the menders must of course be tinkers, and thus Tom Tinker's men. Although Congress, in June, 1794, amended the law, it still remained odious, as it was a repeal of the act that was demanded. The people had for years, in much peril from Indians, cultivated their lands, and when, by their great exertions, more grain was raised than they needed for food, they were met with a law restraining them from using the surplus as they thought best, and they therefore regarded the tax as would be one now on lard, or pork, or flour. The consequence was that the disturbances still increased, and on the 16th of July the house of Gen'l Neville, seven miles south-west of Pittsburgh, was attacked and burned, several persons being killed and wounded. Various meetings of the insurgents were held at different places, and in July, 1794, a large number of men assembled at Braddocks, many in organized companies, under arms, for the purpose of attacking Pittsburgh. The insurrectionary feeling had now reached its height. A word in favor of the law was ruin to any one. On the contrary, to talk against the law was the way to office and personal popularity and profit.

At the assemblage at Braddocks, when it was proposed by David Bradford, who was the most prominent leader, that the troops should go on to Pittsburgh, Hugh M. Breckenridge, who had joined the movement to control, and, if possible, quell it by diplomacy, and in whose writings a full account of the whole matter is to be found, said: "Yes, by all means, at least give proof that the strictest order can be maintained, and no damage done. We will just march through the town and take a turn, come out on the plain on the banks of the Monongahela, and after taking a little whisky with the inhabitants, the troops will embark and cross the river." This was accomplished, and no damage but the burning of one barn done. "The people," says Mr. Breckenridge, "were mad. It never came into my head to use force on the occasion; I thought it safest to give good words and good drink on the occasion rather than powder and balls. It cost me four barrels of good whisky that day, and I would rather spare that than a quart of blood."

On the 14th of August a meeting of 260 delegates was held at Parkinson Ferry, now Monongahela city. Albert Gallatin and H. M. Breckenridge both took prominent part in the discussion, and the treasonable plans of Bradford were softened down and explained away; the original force of the insurrection was condensed down to a committee of 60, which was to be represented by an executive committee of 12, who were to confer with the U. S. Commissioners. To gain time, and thus restore quietness, was the object of Mr. Gallatin and his friends. The Commissioners proposed an amnesty, which, at a meeting held at Redstone Fort, August 28, was accepted through the arguments of Mr. Gallatin and Mr. Breckenridge. This meeting virtually ended the insurrection, although there were enough malcontents left to render it necessary, in the opinion of the President, to send an army of 15,000 men to Pittsburgh, under General Lee. The army arrived in Pittsburgh in November, but met with no opposition, nor

was any blood shed. The army soon returned to their homes; Gen'l Daniel Morgan being left with a few battalions to maintain quiet during the winter, and in the spring, order being fully restored, those were withdrawn.

With the war of 1812, Pittsburgh again entered into the military services of the country. The equipments for the fleet of Perry upon Lake Erie, was, in a great measure, furnished from Pittsburgh; a portion of the cannon being cast at Pittsburgh, and the cordage furnished from rope works then in existence at this point. A company of volunteers under Capt. James Butler, called the Pittsburgh Blues, served in the campaign under Gen'l Harrison, and were included in the detachment of six hundred men who were ordered by Gen'l Harrison, on the 25th of November, 1812, to march from his headquarters and destroy the Indian towns on the Mississinewa river; at the battle there fought, John Francis was killed, and Elliott, Dodd, Read, and Chess were wounded. They also participated in the siege of Ft. Meigs, where Newman and Richardson were killed, and Willock, Ross, Williams, Dobbins, and Wahrendoff wounded. They were also part of the small force of two hundred men, with which Major George Croghan so brilliantly defended Fort Stephenson, against Gen'l Proctor and five hundred English troops, and eight hundred Indians. Of the services of the Pittsburgh Blues at this brilliant defence there is recorded, that, the enemy concentrating the fire of all their guns on the northwest angle of the fort, Major Croghan supposed that when the British attempted to storm the fort, the attack would be at that angle. "Seeing this, he ordered Sergeant Weaver and six privates of the Pittsburgh Blues to place there bags of sand and flour. This was done so effectually, that that angle received no material damage from the enemy's guns." Maj. Croghan had but one cannon in the fort, a six pounder; this he had placed in such a position as to rake the ditch in case the enemy attempted to scale the walls at that point. This *only* cannon was given in charge of Sergeant Weaver and his six men to handle. When late in the evening of the 2d of August, the British storming column attacked the fort, Sergeant Weaver and his six Pittsburghers opened the masked port hole at which they stood around their six pounder, and the piece was discharged at the assailants, then only thirty feet distant. Death and desolation filled the ditch around the works into which the attacking force had leaped in their charge. Fifty were instantly killed and wounded, and the scaling column fled in dismay, nor did they renew the attack; and at three o'clock that night Proctor and his men retreated. Another incident illustrative of the material of this company is pardonable here. The person narrating it, says: "I had been in attendance on Capt. Butler, lying sick in one of the block houses of Fort Meigs during its siege, and starting out one morning to procure some breakfast, saw Sergeant Trovillo cooking coffee over some coals. I told him my errand, and he told me to wait a few minutes and he would divide his coffee with me. I took a seat, and in a moment or two afterwards heard the peculiar singing of an Indian rifle ball, that entered the ground a short distance from where we were sitting. Hurrah! says I; Ser-

geant, what does that mean? He pointed to a tree at a considerable distance from the pickets, where I observed an Indian perched on one of the branches. He said, with great, good humor: 'That rascal, George, has been firing at me ever since I commenced cooking my breakfast.' I swallowed my tin-cup of coffee pretty expeditiously; during which, however, I think, he fired once or twice, and told Trovillo I was not going to remain a target for the yellow skins."

The steamboat "Enterprise," the fourth one that navigated the western waters, took from Pittsburgh some of the cannon and other munitions of war used at the battle of New Orleans; and it is said, by her timely arrival aided greatly in the success of that contest.

The Mexican war of 1846 found Pittsburgh again making a record in the military movements of that day, and being, as in all previous wars, an important point of rendezvous for troops, and supply point for munitions of war.

In the marches and battles of that war Pittsburgh was well represented. Among the troops from Pennsylvania and Pittsburgh were the old Pittsburgh Blues, of the war of 1812, who had preserved their organization from that time. The Duquesne Greys were also among those who fought in Mexico. This company, with others, garrisoned the City of Puebla, under the command of Col. SAMUEL W. BLACK,* and sustained a siege by the Mexican forces of several weeks duration; the story of which is briefly told in the following verses, which were published in the "*Pittsburgh American*," on the day of the return of the Pittsburgh troops, at the close of the war.

Where the pleasant southern breezes

Kist Puebla's towers gray,

Ten to one the wily Mexique,

With the leaguers patience lay.

Ten to one, encamped for weeks

Round Puebla's towers grey.

One to ten was all we numbered

On Puebla's towers gray,

Through the dark and chilling night,

Through the long and burning day,

One to ten we kept the ramparts

Of Puebla's towers grey.

Shame! upon the Mexique eagle,

By Puebla's towers gray,

One to ten alone opposing,

Ten to one they fled away.

Ah! 'twas Black's brave Pennsylvanians

Held Puebla's towers gray.

*This gallant soldier was one of those brave spirits who gave his life for the preservation of the Union. He fell at the battle of Fair Oaks. Brave, impetuous and talented, the following speech

With the outbreak of the rebellion Pittsburgh once more became the scene of military movements, a partaker in military action, and an arsenal for the construction and supply of munitions of war. During the entire period in which the contest was continued Pittsburgh was the gate-way through which passed the most of the troops in their movements from the West to the East, and the East to the West. Early in the war a "SUBSISTENCE COMMITTEE" was established, for the purpose of furnishing a meal to all troops passing through the city. This subsistence committee dined its first regiment on the 28th of July, 1861, and from that period until the close of the war, by night as well as by day, no body of troops passed through the city without partaking of a dinner, supper, breakfast, or midnight lunch, or being invited to. The movement was purely a voluntary one, and sustained by voluntary personal contributions. It was organized August, 1861, and finally dissolved January, 1866. During the period of its organization there was fed 409,745 soldiers, in addition to which 79,460 sick and wounded soldiers were nursed and provided for in the Soldiers' Home.

The announcement of the firing upon Fort Sumter created at once a decided movement in Pittsburgh; a committee called "The Committee of Public Safety of Allegheny County" was formed, the executive committee of which, for several months, sat in constant session day and night.

The close proximity of Pittsburgh to the border line of the seceding States, necessarily brought it at once into the vortex of the active movements of the hour; while her admirable supply of so many of the crude materials from whence munitions of war are formed, and her facilities for manufacturing, converted her workshops into so many divisions of a huge arsenal, in which nearly all the equipments of troops and implements of offence and defence were made. For quite the entire period of the war, Pittsburgh was literally a camp and an arsenal. Her foundries, her rolling mills, her tanneries, her harness and saddle factories, her clothing manufactories, her wagon factories, were all active with the production of shot and shell, of cannon, of armor plates, of wagons, of artillery harness and infantry and cavalry accoutrements, and other munitions of warfare. But few hours of the day or night were without the passage of bodies of troops, or was the roll of the drum silent. Her streets were literally a war path.

While yet the clouds of the rebellion were gathering and muttering with suppressed thunders in the south, and before the firing upon Fort Sumter, one event marked in Pittsburgh the temper of the people of the city, and sounded the keynote of the grand hymn of loyalty that for five years after kept sounding, clear and strong, under defeat as well as in success, through all the loyal States.

made on the 15th of May, 1861, at Omaha, while welcoming his successor to the Governorship of Nebraska, is marked with his characteristics: "On to-morrow," said he, "I shall start for Pennsylvania, to stand there as here, very close to the flag she follows. I think I shall recognize it as the same that has always waved over her strong and brave battalions. It is a goodly flag to follow and carries a daily beauty in its folds that makes all others ugly."

A few days previous to the 26th of December, 1860, an order came from Floyd the Secretary of War, to ship on that day one hundred and fifty pieces of cannon, lying at the Allegheny Arsenal, to New Orleans, under pretext that they were wanted for mounting on Ship Island, in the Gulf of Mexico, on which some fortifications had been begun. The intelligence of this order having gotten abroad, spread rapidly among the people. The *Dispatch* of December 25, commenting upon this news, says:

"Will our people submit to this? Our citizens of all parties as a unit denounce the movement, and prominent democrats, leading Breckenridge men, have telegraphed to Washington to have the order revoked. * * * * * The people of Allegheny county should see that the cannon purchased by the national treasure are not conveyed to the far South, and they need not barricade Penn and Liberty streets to prevent it. Let them decide that no cannon shall be shipped *till Charleston Arsenal is in possession of the Federal Government and Fort Moultrie reinforced*, AND NONE WILL BE."

The italics and capitals are as originally printed in the article, which concludes with the following significant paragraph:

"Arrangements were making on Monday to have some of these guns taken to the wharf. We suppose some one will tap the fire bells on the route on their making their appearance on Penn and Liberty streets, that our people may witness their removal."

Another article in the same paper concludes with, "Our people are a unit that not a gun shall be shipped South." These extracts reflect the intense feeling that prevailed in the community. The commander of the "Silver Wave," on which steamboat the guns were to be shipped, was notified that if he took the cannon on board his vessel she would never pass the limits of the harbor, but would be sunk. Steps were taken to have some pieces of cannon mounted opposite Brunot's island, on the Allegheny side, to effect that purpose as the boat should pass. The commander of the arsenal was called upon by a committee and requested to desist from obeying the order, on the ground that it had its origin under circumstances which contemplated treasonable results. The officer in charge of the arsenal could only suggest that a rescinding of the order be obtained from Washington. In the mean time an informal meeting had been held on the afternoon of the 25th at the Mayor's office, to take action in the matter. The tone of this meeting is presented in the following extract which we quote from the *Dispatch* of the 26th.

"While there is a very decided opposition to any interference with the transportation of the guns to the river, until after we have heard from Washington, and all remonstrance fails, it was equally as decided against allowing their removal from the city should the orders from Washington not be countermanded." Another article says: "The proposed removal of cannon from the arsenal was the all absorbing topic of conversation (*that day*); and judging from the feeling, almost universally expressed, we do not doubt that the officers in command will meet with a determined resistance should they attempt to execute the order of the Secretary of War."

Edwin M. Stanton had at this time become, as Attorney General, a member of Buchanan's cabinet, and to him a committee of citizens applied to obtain a countermanding of the order. A dispatch was also sent to the President from influential citizens, stating: "They would not be responsible for the consequences if the order was not countermanded."

A public meeting was called for Thursday the 30th, to take action in the matter, and hear the report of the committees which had been appointed at the previous meetings. It was while this meeting was in session that a detachment of troops, in charge of a number of guns, moved from the arsenal to transport them to the wharf for shipment on the "Silver Wave." Secretary Stanton had replied that there was no knowledge of the order at the department; but no reply had yet been received from the government to the telegraph of the committee. A telegram had just been read to the meeting, announcing that Col. Anderson had withdrawn from Fort Moultrie to Fort Sumter, when the guns and their escort reached Liberty street, near Wood. The excitement became intense, and most determined expressions of intention to stop the further progress of the guns were made.

The position was one of great moment. There was no doubt that the order of Floyd to ship the guns was given with the intention of having this large amount of ordnance pass into the hands of the rebels. To allow the guns to be shipped was to furnish the avowed enemies of the Union with a valuable supply of artillery. As yet, it was construed, no overt act had been committed by the South. To have, by force of arms, resisted a government officer in the carrying out the order of the Secretary of War, was, under the circumstances, to organize armed resistance to the Federal government. Although no proclamation on the part of the government declared that the South was in rebellion, yet all acts of the Southern States were so plainly evidences of preconcerted rebellion, that the public mind failed to draw the nice distinctions of law, and looked upon the well avowed intention as the fact. Presuming rebellion already existed from the hostile position and acts of the South, it seemed incredible that the government should be shipping cannon where they would be used against it, unless the government was already part of the threatened rebellion of the South against the North. If it were, it was clear the guns must not leave the city. If it were not, it was, beyond doubt, that treasonable motives were concealed in the order; which it was equally the duty of loyal citizens to apprehend. Yet, to stop the shipping of the guns was to be guilty of actual resistance by loyal people to a government loyal to them, which the people were even then preparing to sustain with life and treasure. It was an hour of great and painful uncertainty, calling for coolness and moderation. It can well be imagined, how anxiously those who saw a duty on either hand, yet appreciated the difficulties of the position, counted the hours until such advice could be received from Washington as would decide the course to be taken.

Through the exertions of influential citizens, the troops were halted on Wood street, so that time might be gained in which to obtain the communication so much hoped for from the government.

The line of guns and their escort extended from Virgin alley to Diamond alley, Fifth avenue being in the centre, at the upper end of which, less than nine hundred feet distant, around the Court House, were gathered excited masses determined the cannon should not leave the city, but restrained from actual movement by the red tape of speeches, committees on resolutions, and like delays. The situation was not unlike that previous to the throwing overboard of the tea in Boston harbor, at the outbreak of the revolution. There the citizens had, on the evening of the day on which the event occurred, gathered at Faneuil hall to await the answer of the English Governor to a committee, who had gone to request that the vessels holding the tea might have a re-clearance and be allowed to sail without landing their cargoes. Pending the return of the committee, the meeting was addressed by the speakers present,—when a message from the committee was received, saying that the Governor had refused to allow the ships to clear, Samuel Adams arose and said, “all has now been done that can be to preserve the peace,” upon which the Indian war whoop was raised, and the famous body of Mohawks issuing from the hall, proceeded to the ships and began throwing over the tea. Here, at Pittsburgh, the message had gone to Washington requesting the rescinding of the order shipping the cannon. Awaiting the reply the citizens were gathered in public meeting, and their speakers—by addresses—were holding the people. Two squares distant the cannon, under guard of U. S. soldiers, were halted until that reply could be had. The situation was quite twin with that at Faneuil hall. Happily, Edwin M. Stanton was the loyal, decided, prompt man he ever proved in all the country’s emergencies, and such assurances came from him as enabled the committee to so report as allayed the excitement of the people, although the order countermanding the shipment of the cannon did not arrive for three or four days.

Those who had comprehended the danger and embarrassment of the position drew a longer breath as the meeting quietly dispersed. The troops conveyed the cannon then in charge to the wharf; no more were hauled, and in a few days Floyd’s order was countermanded. What would have been the result had not the order been revoked it is not necessary even to conjecture; but the day, and the hour, will not easily be forgotten by those who were active in procuring such action as prevented a collision between government troops, and a loyal people, determined to prevent, even at the risk apparent, a suicidal action on the part of the government.

It was the first decided action anywhere in the country against the rebellion. It was the first decided expression of the loyal North. The movement was in the hands of men fully as patriotic and determined as Adams and his co-adjutors, and the public feeling, while awaiting the countermanding of the order,

was quite as intense as that which pervaded Faneuil hall. It will also not fail to be seen how the same desire to do all that "could be done to preserve the peace," pervaded the action taken, and the same determination to do that which was a clear point of principle and duty, in event of a refusal to accede to their requests. The similarity of the situations is strongly apparent. It is in keeping here to mention that a company of forty Pittsburghers, under the command of Capt. Robt. McDowell, who marched across the country from Harrisburg, were the first body of volunteer soldiers to arrive at Washington; they reported to Secretary Stanton, then Secretary of War, for assignment to duty in six days after the attack on Sumter. It is also proper here to mention what has been known to but three or four persons, that the first Union victory was won with ammunition furnished from Pittsburgh, by the decision and nerve of two of her prominent citizens. A body of West Virginia troops under Col. Kelley had been armed with muskets furnished by Governor Andrews, of Massachusetts, but were unsupplied with powder or ball. With the ammunition furnished them from Pittsburgh the battle of Phillippi was fought and won, being the first success obtained by Union troops.

The news of the firing upon Fort Sumter, as before stated, created a decided movement in Pittsburgh. An immense mass meeting was held in City Hall, on Monday, April 15th, 1861, at which the following resolutions, prepared by John W. Riddell, the City Solicitor, were read by Thos. J. Bigham, and unanimously adopted:

Whereas, The national government is now seriously menaced by traitors in arms, who have defied its just authority, raised the standard of revolt, and by hostile acts of war disturbed the public tranquility, and endangered the public peace; and

Whereas, In an exigency like the present, it is the duty of all loyal and patriotic American citizens, casting aside the trammels of party, to aid the constituted authorities in maintaining inviolate the supremacy of the constitution and the laws, therefore

Resolved, By the people of Allegheny county in general mass meeting assembled, that we deem the present a fit occasion to renew our obligations of undying fealty to that government and that union which we have been taught to regard and revere as the palladium of our liberties at home and our honor abroad; and in their defence and support, by whomsoever assailed, we will endeavor to prove ourselves worthy sons of patriotic sires.

Resolved, That we especially approve of the course of the Legislature and executive branches of our State government, in promptly responding to the call of the President of the United States for men and means to sustain and protect the National Government at this crisis in its history, and that Allegheny county will contribute her full quota of both to vindicate its authority.

Resolved, That discarding all political or partizan considerations in this hour of our country's danger, we mutually pledge to each other as American citizens for the common defence, our lives, our fortunes, and our sacred honors.

Resolved, That a committee of one hundred citizens be appointed by the chair as a Committee of Public Safety, to see that the patriot cause receives no detriment in this region, and to convene the people whenever in their judgment such a step is necessary."

The Committee of Public Safety authorized in the last resolution was appointed and announced in a couple of days thereafter; and a sub-committee, consisting of Thomas Bakewell, Esq. and Hon. Thos. M. Howe, were appointed to prepare an address. At the first organized meeting of the Committee of Public Safety, on the 27th of April, Hon. Thomas M. Howe presented and read from the sub-committee the following address, which he stated had been written by his colleague, Thos. Bakewell Esq.

TO THE CITIZENS OF WESTERN PENNSYLVANIA:

Friends and Fellow Citizens:

An unexpected emergency has arisen. That Constitution formed by the wisdom of our forefathers, that liberty established by their labors, that independence sealed and sanctioned by their life blood, are menaced, not by the hostility of foreign enemies, but by the reckless ambition of domestic traitors and aspiring demagogues, who have long partaken of the blessing of our free government, and enjoyed their full proportion of its emoluments and privileges. Their unhallowed passions have plunged our beloved country into the horrors of a civil war, and have in some measure exposed our homes, our families, and our firesides, to the desecration and ruin of hostile incursions. Under these alarming circumstances this committee has been organized, not to supercede the action of ordinary tribunals, not to interfere with the exercise of judicial power, but to aid the constituted authorities of our land in the preservation of the public peace, the protection and support of those whose natural defenders may be absent on the call of patriotic duty; and if need be (which may God forbid), to report for judicial action all persons who, false to every dictate of duty and patriotism, may *secretly* contribute that aid and comfort to the enemy which they will not dare publicly to acknowledge.

Diversified as may be our business avocations, our national predilection, our religious opinions, or our political sentiments, on this momentous subject we address you, not as farmers, or manufacturers, or merchants, or lawyers; not as Irishmen, or Germans, as Englishmen, or Welshmen; not as Catholics or Protestants; not as Democrats or Republicans; but as citizens, as Americans and Pennsylvanians; and as such we call upon you to unite as one man in the support of those glorious institutions under which our country has attained a growth and prosperity unequalled in the past history of the world. Let your young men advance to meet the threatening invaders, your old citizens organize for the defence of their domestic hearths. Let ample provision be made for the support of the families of those patriots who may leave home and its pleasures for the stern duties of the tented field. Let a spirit of mutual forbearance and charity prevail. Losing sight of all minor differences in the great object of our country's salvation, and above all, relying on the justice of our cause, let us unite in the determination to transmit to posterity the inestimable blessing of liberty received from our ancestors, in calm yet earnest dependence upon the support and approval of Him who rules the nations with His rod, and without whose notice not a sparrow falls to the ground.

The hand that penned this admirable appeal has for years been dust. Living to see transmitted "to posterity the inestimable blessing of liberty received from our ancestors," he bore his share in the labors and sacrifices of the hour, in the same spirit that prompted the words of the address.

Among the recommendations acted upon at this first meeting was the following, from a committee on organization of Home Guards, made in accordance with the suggestion contained in the address just quoted, the committee say: "It is proposed that this organization shall be the nucleus of future recruits for the public active service of the country."

Under this organization, by May 2d, in less than three weeks time, sixty-four companies were organized, averaging seventy men each. These were armed with guns and equipments purchased by a fund contributed by the banks of the city, through the efforts of John Harper, Esq., President of the Bank of Pittsburgh, who was an active member of the committee for the organization of the Home Guard. Mr. Harper was the custodian of the fund, and under his disbursement the arms were purchased and distributed. It is worthy of remark—because at times uncalled for jeers have been made at the Home Guard—that this body of men proved just what the committee on its organization contemplated in their recommendation already quoted, "the nucleus of future recruits for the public active service of the country." There was not one of the sixty-four companies that did not contribute largely of its members, already well-drilled in arms, from time to time, to the various companies and regiments that under the several calls for troops entered active service; while not only regimental commanders, but able general officers as well, were furnished from this school of soldiers.

On the 15th of April recruiting began; and on the 17th, the Turner Rifles left for Harrisburg; followed on the 18th by four other companies, and by three more on the 20th. On the 22d a regiment—the 12th—was organized from ten more companies, and a battalion formed of eight other companies; which subsequently, with two others, formed the 13th Regiment; being twenty-six full companies which, in less than ten days time, responded to the call for troops. On the 24th the 12th and 13th Regiments left Pittsburgh for Camp Slifer, at Harrisburg, where the Pennsylvania troops were being rendezvoused, previous to going to the front.

Through the thronged street, to the rapid beat
Of the drum's triumphant roll,
While the bugle's note, on the air afloat,
Went thrilling the weakest soul,
We followed our soldiers, so young and brave,
Our soldiers, so tall and brown,
As the sun of May, with the closing day,
Made golden the streets of the town.

O, that gallant array! on that spring-time day,
With the flag of our country over them flying;
How the trumpets blare made the heart of each there
Swell proudly and brave, to its echoes replying.

While the steady tramp of the solid ranks
 To the time of the music slowly swaying,
 Through all the throng made the weakest strong
 As the sun on the bayonets redly playing.
 As we followed our soldiers, so young and brave
 Our soldiers, so tall and brown.
 While the sun of May, in the closing day,
 Made golden the streets of the town.

All the pride of war, in our thoughts we saw—
 The sun on the musket barrels glancing;
 Where, across the slopes, through the distant copse,
 The foemen in their pride were advancing.
 We drew our breath, in the face of death,
 With lip compressed and teeth firm set,
 In the silence grim, succeeding the din,
 Of the *Kling*, *KLANG*, *Kling*, of "fix bayonet!"
 And joyfully heard the colonel's word,
 Though our hearts were nervously beating
 As never before, like the thunder's roar,
 "CHARGE!" swift down the line repeating.
 A thousand as one, e'er the word was done,
 Down the slope we were fiercely leaping;
 Our bayonet's line, in its glittering shine,
 Like to fire steadily sweeping;
 While the rebels' yell, and the shriek of shell,
 To our charging cheer replied—
 We heard and saw, in that vision of war,
 As we followed in love and pride,
 Our soldiers so young, our soldiers so brave,
 Our soldiers so tall and brown,
 When the sun of May, near the close of day,
 Made golden the streets of the town.

Down the long descent, double quick we went,
 Our line without bend or quiver,
 Though the face of the wood, where the foemen stood,
 Blazed with their fire's rapid deliver.
 Through that storm of pain, that deadly rain
 Of shot and minnie ball screaming,
 Without thought of fear, with cheer after cheer,
 We swept like the wind, our banner streaming;
 As through the smoke its bright stars broke,
 We thought of the little child's saying—

"God made that flag, pa, don't you see the stars,"
And we feared not the batteries playing.
Nor the foemen's yell, like a cry from hell,
Up the hill-side fiercely shrilling—
Thus visions of war in fancy we saw,
As with hearts to the trumpet thrilling,
We followed our soldiers, so young and brave,
Our soldiers, so tall and brown,
When the sun of May, at the close of day,
Made golden the streets of the town.

We bade them good-bye with a misty eye,
As we thought of the battle our fancy paraded;
We bade them God speed, God's help in their need,
As the sunset into the twilight faded.
But thought still followed our soldiers brave,
Our soldiers so tall and young,
When the evening prayer stirred the evening air,
And the evening hymn was sung.*

It is not the design of this chapter to mention in detail all or any of the regiments, companies, and men who thus, at the call of their country, followed where duty led, nor is it the province of this book to enter upon a history of the public and private actions of the people of Pittsburgh, in the days when, during the war for the preservation of the Union, Pittsburgh was, as before observed, a camp and an arsenal. That book is yet to be written. A proper presentation of those things will fill more pages than those allotted to this volume. The subject is but touched upon here as entering into "the Military Record of Pittsburgh," and to show in a volume primarily designed to exhibit her resources and capabilities, how in this war, as in all previous military movements of the country from its earliest settlement, Pittsburgh became a point of military prominence. Suffice it to say that quite twenty thousand of Pittsburgh's young men carried the musket or the sword in all the prominent battles of the war. To mention a few, where all merit so much, cannot justly be done; to mention all may not be for reasons already given. The pen would fain linger to tell of Cold Harbor, Seven Oaks, Chancellorsville, Fredericksburg, the Wilderness, Lookout, Stone River, Antietam, Gettysburg, and a score of other well foughten fields, where Pittsburgh's youth fought, and many of their brave hearts gave their life's blood for the Union they marched to save, and died in saving. Honor be to their memories.

*From a War Poem by Geo. H. Thurston.

The beautiful grounds of Allegheny Cemetery holds the ashes of many of Pittsburgh's soldiers who thus gave life for liberty.

Rest! soldier for thy country slain,
Sleep! patriot true and brave;
For Honor decks thy burial place,
And Fame shall wreath thy grave.
There pilgrims oft in years of peace,
With reverent steps shall tread;
Thy country's trial still repeat,
Thy name with Glory wed.

Green shall the turf that wraps thy breast,
By patriot love be kept;
By freemen still thy praise be sung,
Thy loss by Freedom wept.
Charmed is the air around thy grave
By Honor, and by Fame,
While Glory still, a sunbeam, gilds
The stone that holds thy name.

There Freedom will her striplings bring,
To learn the duty freemen owe.
There patriots pause, there poets sing,
There age awhile renew youth's glow.
Embalmed for aye on History's page,
Rest! patriot true, sleep! soldier brave,
For Honor keeps thy memory green,
And Fame walks sentry at thy grave.*

It was not alone in furnishing troops for the battle-field, nor standing ready by day or by night to cheer with a breakfast, a dinner, or supper, served by Pittsburgh's fairest faces and whitest hands, the passing soldier, grim with the shock of battle, and weary with his march, that Pittsburgh's patriotism kept step in the line of duty; her heart was away in the camp, reaching out to the bivouac, sorrowing beside the painful hospital couch, or grieving over the wounded on the battle-field.

On June first, 1864, was opened the great Sanitary Fair, which for weeks was crowded by thousands on thousands of young and old, eager to contribute to the fund, to raise which the fair was projected. That effort was as glorious in its results as it was in its conception, and the object to which its profits were to be devoted. Like the story of "Pittsburgh soldier boys," the details of the Fair cannot be entered into in this volume, they must remain for the day when

*From a War Poem by Geo. H. Thurston.

some able mind gathers into narrative all that can be told of Pittsburgh during the rebellion. It is sufficient here to record, that the amount of money received from the fair was \$361,516.17. A portion of this patriotic fund unexpended during the war was devoted to the endowment of the Western Pennsylvania Hospital, in the 12th ward of the city. The sum of \$203,119.57 was handed over by the Board of Managers of the Pittsburgh Sanitary Soldiers Home, in cash and other articles; it being a stipulation of the gift that Pennsylvania soldiers sick or infirm should always be admitted for treatment free of charge.

It was also after the battle of Shiloh that the great heart of Pittsburgh went throbbing with sympathy over the story of the wounded of that terrible day; nor rested until two well appointed steamboats sailed for Shiloh, carrying some of Pittsburgh's most manly-hearts and skillful surgeons to that distant battle-field, to gather into those boats, under the care of those surgeons and tender nurses, the wounded, and bring them to Pittsburgh for restoration to health. As the boats proceeded up the river, those of the wounded who desired it were left at cities and landings as near their homes as possible. Fifty-four were brought to Pittsburgh; of whom eight belonged to Iowa regiments, seventeen to Illinois, seventeen to Michigan, three to Ohio, three to Missouri, two—who were prisoners of war—to Alabama, and three whose State or regiment was not recorded. Of these eight died in the hospital; being two from Iowa, two from Illinois, and four from Michigan. Forty-two were regularly discharged on recovering, and helped on their way with tickets to their homes.

Sunday evening, June 14, 1863, began another especially noticeable episode in Pittsburgh's military record; on that evening dispatches were received by Major General Brooks, then commanding the department of the Monongahela, from Secretary Stanton and Maj. Gen. Halleck, stating that the city was in eminent danger from the rebel forces, and advising him that no time was to be lost in putting the city in a state of defence.

A meeting of the more prominent manufacturers, and other citizens, was at once called by Gen'l Brooks for consultation. It being Sunday evening, many of those whose advice was desired were at church and were called out by special messengers. The meeting continued in session until a late hour. At midnight it was determined that the work-shops should all be closed, and the men employed throwing up earth works around the city, under charge of the government engineers, who had been sent from Washington to lay out the defences. This was done; and for two weeks time Pittsburgh bore much the aspects of a beleagured city. During that time thousands of men were busy constructing rifle-pits, and earthworks for the mounting of cannon. From fifteen to sixteen thousand men were at times laboring in the entrenchments, which extended from Saw Mill run, now in the 36th ward of Pittsburgh, along the range of hills running up the south side of the Monongahela, to about opposite the Four Mile run, in the 23d ward of Pittsburgh; across the city from the Monongahela to the Allegheny, and on the Allegheny side along the Ohio river.

The day succeeding that Sunday evening meeting the following dispatch was received by Hon. Thos. M. Howe, then and for some time previous A. A. Adjutant General of the State of Pennsylvania:

HARRISBURG, June 15, 1863.

HON. T. M. HOWE.

The following received from Chambersburg, eight P. M.; make it public and arouse the people: "Lieut. Palmer, of Purnell's cavalry, has just came in; had to fight his way through two miles this side of Greencastle; reports enemy advancing in three columns—one toward Waynesboro and Gettysburg; one direct to Chambersburg; and one toward Mercersburg and Cove Mountain; not known whether they will proceed in separate columns or concentrate here. Large fire seen in direction of Greencastle. Palmer reports column at Greencastle about five thousand strong, principally cavalry, supported by infantry and artillery."

A. G. CURTIN,
Governor of Pennsylvania.

On the 17th the following spirited order was issued by Gen'l Howe:

HEADQUARTERS PENN'A MILITIA, WESTERN DISTRICT,
PITTSBURGH, JUNE 17, 1863.

Reliable advices having been received at these headquarters that a force of the enemy at eleven o'clock this morning had advanced twelve miles westward from Cumberland, giving unmistakable indications of their purpose to invade this neighborhood, I desire again* to call upon all good citizens in Western Pennsylvania capable of bearing arms, to enroll themselves immediately into military organizations and to report to me for duty.

If we would stay the march of the invader, we must be prepared to admonish him that we are fully organized and ready to receive him in a manner becoming freemen who cherish the time honored institutions, in defence of which so many of our sons and brothers have already offered their lives a willing sacrifice. Let us emulate their glorious example, and never let it be written of us that we proved recreant in the hour of danger. Whenever companies are duly enrolled and reported to these headquarters, they will be called and assigned to duty by Maj. Gen. Brooks, whenever and as the emergency may seem to demand, and who will be prepared to furnish arms and equipments.

THOMAS M. HOWE,
A. A. Adjutant General State of Penna.

The extent and strength of those fortifications constructed in two weeks' time, is best shown by the following extract from a report made by Captain Craighill, an United States engineer officer in charge of the work, to the Committee of Public Safety before mentioned. Says the report, "It is well known that when Gen. Barnard arrived here, the city was not supposed to be threatened by anything more serious than a raid of a few thousands of cavalry or mounted

*In connection with this order it is proper to mention that the entire handling and movements of the volunteer and drafted troops of Western Pennsylvania in their preliminary organizations were through General Howe's orders and oversight, in the performance of his duties as a member of Gov. Curtin's staff, and as A. A. Adjutant General of the Western District of Pennsylvania. Enjoying throughout the entire period of the war the fullest confidence of the General and State Governments, the great labors of his office were performed by him without compensation or wish for recompense, satisfied with the conscientiousness of fully rendering that patriotic service prompted by his high sense of personal duty to his country in its hour of peril.

infantry, accompanied by light artillery. The instructions from Washington under which we acted looked to securing the city against attack. This has been done. We are, moreover, in a condition to make a vigorous defence against an army." During those two weeks all business was for several days suspended under the orders of the Committee of Public Safety. The necessity of those expenditures of time and money has frequently been questioned by those not fully acquainted with all the circumstances. There is little or no doubt that the capture of Pittsburgh was contemplated by the rebels. Its geographical position, its resources, and the vast arsenal that it was, and could be made, all rendered it a strong strategical point, whose possession or destruction was most important. At the time the city was fortified, General Lee was marching into Pennsylvania, while the rebel forces were being massed along the frontier line of West Virginia and Pennsylvania. An advance guard of rebel cavalry occupied Morgantown, and another body of horse were sweeping up the valley between the ranges of the Allegheny mountains toward Bedford and Johnstown. A force of rebels occupied McConnellsburg, and held the telegraph office there. By these messages were exchanged with the operators of the Western Union Telegraph Company at Pittsburgh, in which the rebels stated their intention of reaching the city, and were in turn informed of the preparations making to receive them. A body of the cavalry advance, at Morgantown, had crossed the Cheat river to proceed to Pittsburgh, which, by cross country roads, was less than a sharp day's ride, when word was received by the leaders, through messengers sent by spies, that the city was being strongly fortified. Upon which information they retreated across the river, and finally fell back from Morgantown.

Had the result at Gettysburg been different, there is no doubt that Pittsburgh would have been attacked. This is apparent from the forces which gathered at Morgantown and the vicinity, and were concentrating at McConnellsburg and that section.

The information received of the work being done to fortify Pittsburgh, caused a delay, in which time the defeat of Lee changed the plans of the rebel leaders. At Washington, among the loyal men in position to know, in West Virginia, and among those fully informed at Pittsburgh, there existed no doubt, that the city was in eminent peril; that, the following dispatch from the Secretary of War, dated four days before dispatches already mentioned as sent to Gen'l Brooks, shows:

WAR DEPARTMENT, 11:45, P. M.,
WASHINGTON, June 10, 1863.

TO HON. THOS. M. HOWE:

Maj. Gen'l Brooks left here this morning for Pittsburgh to take command of the Department of the Monongahela. He is an able and resolute officer, but will need all the assistance you and your people can give. I wish you would go on his staff. The latest intelligence indicates that you have no time to lose in organizing and preparing for defense. All the

field artillery on hand at Watertown has been sent by express to Pittsburgh. Whatever aid can be given here you shall have. EDWIN M. STANTON.

Had the city been taken by the rebels, the result of the contest for the preservation of the Union might have been different. The East and the West would have been severed.

Pittsburgh's position is one that admitted of being strongly fortified, and an area enclosed that would amply support a large body of troops; while the facilities the Ohio river gave for fitting out armed flotillas commanded the western waters. Only about one hundred miles from the Lakes, with a railroad thereto, admirable opportunities for supplies from England through Canada would have been open. But sixty miles from the Virginia line as the base of supplies from their own territories, with railroad and water transportation a portion of the distance, it would have required large forces and severe fighting to have broken the barrier that would then have been erected between the West and the East. The loyal North would thus have been cut in two, with a result it is easy to conceive, though difficult to depict, in the happy failure of the plans of the rebels. This is not the place to present the strategical importance of Pittsburgh. There can be no doubt that the government felt the importance of the preservation of Pittsburgh; and it is more than probable, that the action of fortifying the city detained the body of cavalry detailed for its capture, until too late to accomplish their purpose. Had it been captured, there is but little doubt, the rebels would have endeavored to have held the city. Its admirable facilities for the manufacture of munitions of war; the opportunities of receiving supplies from Canada; its capability of being strongly fortified; a capability so great, that a Commissioner of U. S. Engineers, who made an examination on this point in June, 1861, pronounced it the strongest position they knew in the country; its strategical power as severing the West and the East, and thus rendering difficult the movement of troops between the two sections, would all have made it important for the Confederates to have held the city if possible; and succeeding therein, caused, perhaps, a different ending of the civil war.

The fortifying of Pittsburgh was by many looked upon as a "Scare," and many of her own citizens have been accustomed to so pronounce it. If it was a scare, it was participated in by the government from a knowledge of the importance of the place as a military supply point, as well as the gate between the East and the West, through which the military intercourse of the two sections was maintained, and supplies and armies received and distributed. It was a scare on the part of those who knew the intentions of the rebels, and of a few who were aware that the fall preceding the outbreak of the war, a most thorough military and engineering reconnoissance was made, with ulterior objects, by a person in the interests of the Confederates, and that at the time of the advance of Lee's army into Pennsylvania, this reconnoissance, with a map showing all the details of the topography of Pittsburgh, was in the hands of the Confederate government.

Throughout the war Pittsburgh continued to furnish soldiers, to nurse the sick and wounded, supply the camps, and manufacture munitions of naval and land warfare. In the chapter allotted to the consideration of Pittsburgh as a naval and military arsenal, those manufactures are more fully spoken of, and the brief index here made of Pittsburgh's military record is closed, feeling that, perhaps as it is, too much of detail has crept in, yet satisfied that less were not sufficient to fill the requirements of the title of the chapter,

CHAPTER III.

GEOGRAPHICAL POSITION.

From the time the white man first set foot in the western valleys, the geographical position of Pittsburgh has rendered it a marked point; and until the war of the Revolution severed it from any claim of ownership by European powers, its site was a subject of contention between England and France, and was regarded by the statesmen of those nations as an important position.

Pittsburgh is situated in latitude $40^{\circ} 35'$ north, longitude $89^{\circ} 38'$ west, and occupies the position of a western capital of Pennsylvania.

Located at the head waters of the Ohio, at the junction of the Monongahela and Allegheny rivers, she commands an inland navigation of many thousands of miles.

Pittsburgh combines more geographical advantages of position than any inland city or town in the United States. Distant only from 300 to 400 miles from three of the most important seaboard cities of the Union, and but a summer day's ride from either, for the purposes of exportation or importation she possesses many of the advantages of the cities lying immediately upon the sea coast.

About 150 miles from the great chain of inland seas, to whose shores access is had in a few hours ride, she partakes of the advantages of the Lake cities for intercourse with the Canadas; and for outlet through the lake route to the ocean; while by her rivers she commands another and an easy access to the ocean and foreign nations. Thus having the choice of three avenues whereby she may export beyond the borders of the United States her manufactures, or receive the products of other countries.

Situated in the heart of the bituminous coal formation of the Appalachian field, and equally advantageously located as to the deposits of iron ore, her geographical relations to the staple materials of Pennsylvania, as well as of the Union, are unequalled. Her location to the whole extent of country bounded by the Atlantic Ocean on the east, the Gulf of Mexico on the south, the Mississippi river on the west, and the Lakes upon the north, is so nearly central, that when viewed with reference to her natural means of intercourse with the States within those boundaries, *she stands in the position of a geographical centre.* Describing upon an accurately proportioned map of the United States a circle, with a radius of 400 miles from Pittsburgh, it embraces therein the following States entire, and in parts: Pennsylvania, New York, Vermont, Massachusetts, Connecticut, Rhode Island, Delaware, New Jersey, Maryland, Virginia, Ohio, North Carolina, Tennessee, Kentucky, Indiana, Michigan, Canada West, part of Illinois, and the northern portion of South Carolina. This circle embraces every variety of climate, and nearly, if not quite all, the staples of the various sections of the Union; *for*

the products, and the business of which, Pittsburgh, as the centre of the circle, reaches but 400 miles on either hand.

As a geographical centre of such an available business territory, it is not without interest to note the increase in the wealth of the portion of this territory embraced in the Ohio valley, only, in the past twenty years. In 1850 the valuation of property, real and personal, of the seven Ohio States was \$2,089,002,652. In 1870 the census states it at \$10,726,839,301, or an increase of over five hundred per cent. Under the same ratios the valuation of the same species of properties will be in 1890, only fourteen years from now, over *thirty-two thousand million*; this is allowing the increase from 1870 to 1880 to be the same as from 1860 to 1870, and from 1880 to 1890, only one-half. To this immense aggregation of wealth the geographical position of Pittsburgh is one of control, if only ordinary business activities are used to maintain markets, and hold trade.

In the same period the property of the sea coast States, real and personal, would, under the same ratios, be *thirty thousand million*. As before stated, to the most of those States, as to those of the Ohio valley, Pittsburgh stands as a geographical centre. By that same geographical position, Pittsburgh holds a grasp upon the products and wants of the Mississippi valley States, as well; which showing by the census of 1870, a valuation of personal and real properties, of nearly four thousand million of dollars, notwithstanding the losses consequent on the civil war, and an increase, notwithstanding, of quite fifty per cent. over the valuation of 1860, which in 1890, under the same ratios of increase should not be less than eight thousand million of dollars. *Within the four hundred miles of reach* on either hand from the centre of her circle, will be accumulated in fourteen years from now quite seventy thousand million of dollars of real and personal property. And allowing, as before stated, the increase from 1870 to 1880 to be as from 1860 to 1870, and from 1880 to 1890, one-half that ratio, what opportunities for business; what room of enterprise; what probabilities for the accumulation of wealth does not the geographical position of Pittsburgh to these riches suggest to capital, the enterprising man of business and the skillful mechanic, seeking location for the employment of their respective business forces; for to this extent of country the manufacturing advantages that Pittsburgh and its neighborhood possess must always prove a magnet, attracting business and population.

Beyond her qualities as a manufacturing community, Pittsburgh possesses another attractive feature—*she is the gateway of the West*. From her situation at the head of the Ohio, such articles as have a preference for water carriage, either on account of demanding low freights, or from a desirability to be but little handled, will pass through Pittsburgh to reach such a channel for distribution throughout the West.

This will be of yet greater power in increasing the population of Pittsburgh, its business and its wealth, in the future than in the past, presenting another consideration to the man of capital, the active, enterprising, far-seeing business man, and the skillful, ambitious mechanic, to locate at Pittsburgh.

In years past the use of the Ohio as a transportation facility has been limited by the occurrence of seasons when low water interrupted the continuous use of the river, and deprived it of the force of a daily reliable facility for transportation. The improving of the navigation of the Ohio has, in the past three years, been strongly pressed upon Congress by a Board of Commissioners for the seven Ohio river States. A plan for its radical improvement has been adopted by the United States engineers, and an appropriation made by government to begin the construction of the first adjustable dam. By a series of these dams it is proposed to secure the *desideratum* of never less than six feet of water at all seasons, insuring a continuous daily navigation of the Ohio by boats carrying a thousand tons and upwards.

The increasing demand for cheap transportation, and in fact all transportation arising out of the multiplying wants of the growing populations of the various sections of the nation, must at an early day cause the Ohio to be made as fully available for transportation as it is possible by engineering skill to render it. How greatly that will strengthen the already strong geographical position of Pittsburgh is easily seen. Distant but twelve hours time by railroad travel from the great sea ports of Baltimore, Philadelphia and New York, and by the new route now projected, twenty hours to Boston, or a similar time via. Washington to Richmond, *Pittsburgh holds the key to the commercial intercourse between the West and those ports.*

Situated at the head of such a great inland water highway, with its consequent powers of cheap carriage, Pittsburgh must become a great produce centre, and trans-shipment and distribution point, not only of the western products needed by the Atlantic States, but also of the importations from Europe or eastern products required by the West. Some few statistics will show how probable this is. The sixteen sea coast States even now depend on the West for two-thirds of their food, and the question of their supply assumes in the future under the increasing ratios of population an overwhelming magnitude. Cheap transportation is therefore one of the provisions required for the future comfort and cheap sustenance of the people of those States. How distinctly the geographical position of products and consumers of food in the United States suggests the central route of the Ohio valley as the line of a cheap transportation facility, and the advantages of water for cheap carriage indicates the Ohio river as that facility. The position of Pittsburgh at the head of the Ohio, and her direct and short railroad routes to the Atlantic coast, tells in a word what, under the full use of that river as a cheap carrying power, the city must be.

By the census ratios it appears, that in fifteen years the sixteen sea coast States will require one hundred and thirty-eight million bushels of wheat alone beyond what they produce per annum, or over three million tons. Grain can be carried on railroads for one and a half cents per ton per mile. On the Ohio river it can be carried for three mills per mile. Under these figures the one hundred and thirty-eight million bushels of wheat carried to Pittsburgh from St. Louis

by rail, a distance of eight hundred miles, would cost for transportation thirty-six million eight hundred and forty thousand dollars; but, carried by river, a distance of one thousand, one hundred miles, would cost only ten million, one hundred and thirty-one thousand dollars; a saving to the consumer in the Eastern States of nearly twenty-seven million of dollars in one year's expenditures for wheat alone. Without entering into the figures that all other supplies, whether brought from the West to the East or the East to the West, would create, it is evident that, as before observed, that under the increasing population of the country and its growing wants, the Ohio must at an early day be made as fully and comprehensively available for cheap transportation as it is possible for engineering skill to render it. What possibility, what probabilities of population, of business development, of increased values in real estate, does not this contain for Pittsburgh? Reaching by five distinct railroad routes the five principal sea coast cities, she figuratively lays her hand, of which the five railroads are the fingers, upon their produce trade; while by eighteen thousand miles of river transportation her boats can distribute from and gather at her wharves, at cheap rates, the interchanges arising from the wants and industries of millions of people.

The geographical position of Pittsburgh has been of powerful influence in causing her growth; it must still exert a power, which under the improvement of the Ohio river as briefly indicated, cannot be overestimated.

Reaching through natural avenues of travel the following States and counties by steamboats, without transshipment of goods, no one can, viewing in connection with our railway system these great river facilities, dispute to any extent the propriety of allowing to Pittsburgh the title of "The gateway of the West."

By the Ohio river, from Pittsburgh to Cairo, touching every important point in West Virginia, Southern Ohio, Northern Kentucky, Southern Indiana, and Illinois. By the Mississippi, the towns and counties bordering upon that river in Louisiana, Mississippi, Arkansas, Tennessee, Kentucky, Missouri, Illinois, Iowa, Wisconsin, and Minnesota. By the Missouri river, Central Missouri, Kansas, Nebraska, Decotah, and Montana. By the Arkansas and White rivers, Central, Southern, and Northern Arkansas. By the Red river, Central Louisiana. By the Wabash, Central Indiana. By the Tennessee, Western Tennessee, Kentucky and Northern Alabama. By the Cumberland, interior of Kentucky, and Northern counties of Tennessee. By the Big Black and Yazoo rivers, inland Mississippi. By the Minnesota, the interior of Minnesota. By the Illinois river, the interior of Illinois. By the Muskingum river, the interior of Ohio. By the Allegheny, the Northern portion of Pennsylvania, and the South-western of New York. By the Monongahela, South-western Pennsylvania and West Virginia.

Thus reaching by river navigation eighteen States and two territories—not only the border counties thereof, but the interior of those States as well,—affording unparalleled facilities for reaching from the 46th degree of northern latitude to the 30th; from the 1st degree to the 22d longitude west from Washington, embracing an area of 1,052,000 square miles of territory.

Of this extent of country, the Ohio river passes along the borders of 6 States, watering the shores of 71 counties, viz: 2 in Pennsylvania, 12 in Virginia, 13 in Ohio, 25 in Kentucky, 14 in Indiana, and 5 in Illinois. The Mississippi traverses the boundaries of 10 States, and gives navigation to 95 counties, viz: 6 in Minnesota, 10 in Iowa, 8 in Wisconsin, 17 in Illinois, 14 in Missouri, 2 in Kentucky, 5 in Tennessee, 10 in Mississippi, 6 in Arkansas, and 17 in Louisiana. The Missouri washes the shores of 3 States, 24 counties in Missouri, 11 in Nebraska, and 6 in Kansas. The Tennessee gives water transportation to 3 States, and outlet to 14 counties, viz: 2 in Alabama, 6 in Tennessee, and 6 in Kentucky. The Cumberland affords water carriage through 2 States, and to 9 counties, viz: 6 in Tennessee and 3 in Kentucky. The Illinois and Kaskaskia give to 24 counties in Illinois navigation; and the Wabash similar privilege to 6 counties in Indiana and 5 in Illinois. The Arkansas affords to 12 counties in that State a like advantage, and the Red river the same to 9 counties in Louisiana. The White river gives carriage by water to 9 counties in Arkansas and 5 in Missouri. The Yazoo, the Sun Flower and Big Black, afford to 11 counties in Mississippi travel by river communication. The Hatchee and Obion the same facilities to 6 counties in Tennessee. The Kentucky and Green rivers egress to the Ohio to 14 counties in Kentucky. The Osage and Maramec rivers, steamboat navigation to 8 counties in Missouri. The Platte river to 4 counties in Nebraska. The Des Moines and Iowa rivers give to 11 counties of Iowa access to the Mississippi by water; and the Wisconsin and Rock rivers the same facilities to 11 counties in Wisconsin. The Muskingum to 3 counties in Ohio. The Allegheny gives 2 States, and 8 counties in Pennsylvania and 1 in New York, communication by water to market for their productions; and the Monongahela similar advantages to 2 States and 5 counties in Pennsylvania and 1 in Virginia—being 383 counties to which Pittsburgh has direct communication—forming portions, as before observed, of eighteen States and two territories, by the rivers named.

In view of this unequaled river system, giving Pittsburgh thus direct access to the very hearts of eighteen of the finest States of the Union, can there be any doubt of the future of the Iron City as a commercial and shipping, as well as a manufacturing point. The contemplated improvement of the Ohio may be for a brief time delayed, but the very necessities of the country will force the expenditure of the money requisite to render this great highway of transportation all it can be made, and which its location to producing and consuming populations of the country indicate it must be. Not only will the constantly increasing wants of the people for cheap transportation require this, but the steadily growing bulks requiring transportation will render it necessary, and such improvements of the navigation of all connecting rivers, as will make most available to those twenty States this system of inland navigation, without a parallel in any nation or in any country, whose value the following table shows:

STATISTICS OF THE CENSUS OF 1870
OF THE PRINCIPAL RIVERS NAVIGABLE FROM PITTSBURGH TO THEIR HEAD WATERS WITHOUT
TRANSPORTATION OF FREIGHTS.

Rivers.	States	Con- ties.	Population.	Cash Value Per- sonal and Real Estate.	Cash Value Farms.	Cash Value Farm Products	Cash Value Farm Stock.
Allegheny, {	Pa.	8	505,999	466,559,891	134,109,995	19,189,794	14,328,980
	N. Y.	1	43,909	20,620,578	22,914,176	5,224,297	4,192,525
Arkansas, .	Ark.	12	117,159	46,717,249	11,915,701	9,737,231	4,051,731
Big Black, .	Miss.	4	79,028	17,217,641	8,460,130	7,675,788	2,954,476
Cumberl'd, {	Tenn	6	142,181	99,594,035	2,984,353	7,320,624	5,234,567
	Ky.	3	32,712	8,615,440	4,154,292	2,389,414	1,493,178
Des Moines, .	Iowa	7	147,819	70,172,314	42,408,488	12,088,227	9,638,004
Green, . . .	Ky.	7	94,820	76,553,755	15,207,468	6,563,663	4,126,972
Hatchee, . .	Tenn	4	68,890	27,523,662	9,994,930	6,213,823	2,650,037
Illinois, . .	Ill.	18	404,650	294,109,666	171,352,947	35,847,671	25,509,535
Iowa,	Iowa	4	73,371	44,559,300	28,774,948	8,029,545	6,090,578
Kaskaskia, .	Ill.	6	138,501	94,719,512	42,624,517	12,526,686	6,333,922
Kentucky, .	Ky.	7	73,730	31,156,717	21,119,829	5,656,039	4,312,076
Missouri, {	Neb.	11	72,480	38,759,779	18,873,549	5,450,525	3,781,176
	Mo.	24	790,678	781,580,770	161,705,310	38,122,565	26,794,071
	Kan.	6	11,925	38,997,189	13,964,477	4,588,272	2,837,867
Maremee, . .	Mo.	3	35,081	15,458,520	7,464,692	2,022,517	1,023,960
Monon'hela {	Pa.	4	216,373	175,442,325	119,031,064	13,776,920	10,937,032
	W.V.	1	13,547	4,445,727	4,724,358	1,161,916	71,260
Muskingum, {	Ohio	3	105,858	52,476,159	34,250,070	6,738,055	4,420,775
	Ark.	6	42,889	22,303,582	5,699,945	4,834,456	1,687,667
	Iowa	10	280,214	171,893,476	88,114,903	24,695,042	16,830,325
	Ill.	17	438,545	307,910,775	167,216,820	42,141,477	24,078,023
	Ky.	2	14,914	5,755,571	3,172,584	1,410,622	663,784
Mississippi, {	La.	17	366,637	249,194,823	31,266,079	20,963,613	5,099,870
	Mo.	14	182,269	121,178,520	46,883,095	13,207,193	9,482,765
	Miss.	10	129,482	44,092,210	22,620,138	16,686,602	4,948,541
	Tenn	5	118,234	61,242,891	17,594,456	18,752,485	3,600,871
	Wis.	8	126,468	71,922,260	28,299,010	10,058,448	6,213,177
	Minn	6	115,129	73,436,276	27,630,190	10,272,324	5,202,647
	Ind.	14	252,124	151,372,179	57,449,434	13,282,795	7,928,265
	Ill.	5	46,017	17,410,560	5,573,869	2,265,663	1,113,369
Ohio, . . . {	Ohio	13	693,571	565,135,553	143,896,281	27,478,685	16,085,167
	Ky.	25	424,845	262,330,888	80,762,422	21,027,194	13,934,083
	Pa.	2	298,342	389,246,865	60,646,521	6,502,355	4,591,501
	W.V.	12	130,557	67,395,785	27,964,932	5,888,622	3,924,395
Osage, . . .	Mo.	5	42,243	17,100,000	7,127,978	2,196,192	1,799,292
Obion, . . .	Tenn	2	29,290	10,055,882	4,388,101	3,092,877	1,733,770
Platte, . . .	Neb.	4	11,413	9,473,733	2,557,727	4,489,543	690,594
Red,	La.	9	111,664	22,394,847	11,256,425	11,440,665	3,521,096
Rock,	Ill	5	147,455	9,747,797	60,915,264	14,276,561	10,654,091
Sunflower, .	Miss.	1	14,569	6,191,200	6,002,270	3,818,040	798,862
	Ky.	6	66,568	20,165,447	8,187,035	1,588,080	2,708,193
Tennessee, {	Tenn	6	78,652	18,564,598	7,800,849	4,469,930	3,149,334
	Ala.	2	23,097	6,745,207	1,884,223	1,488,678	810,013
	Ill.	5	70,828	36,390,528	17,972,443	5,309,294	3,210,430
Wabash, . . {	Ind.	6	120,960	87,950,086	56,711,788	8,528,248	5,555,958
White, . . .	Ark.	9	72,111	25,719,823	6,084,961	6,659,337	2,541,123
Wisconsin, .	Wis.	6	168,295	111,748,770	52,461,314	15,362,820	8,451,978
Yazoo, . . .	Miss.	6	58,736	37,893,421	16,523,247	14,342,529	4,006,599
Totals,		377	7,834,908	5,408,292,792	1,953,519,698	522,833,759	316,498,908
Same territory, 1850			4,600,426		601,312,416	218,992,007	87,413,443
Increase in 20 years,			3,234,582		1,352,207,272	303,841,752	229,085,345

CHAPTER IV.

THE RAILWAY SYSTEM OF PITTSBURGH.

By reference to a map it will be seen that the Pittsburgh Railway system is, taking into view the scope of its connections, one of great value.

Seated midway between, as has been before observed, an empire of population on the East and an empire of people on the West, Pittsburgh's facility for railroad communication with the trade of either section by railway is direct, comprehensive and well sustained.

Eastwardly by the PENNSYLVANIA RAIL ROAD, to Philadelphia, it attaches to New York, and the North-east by the New Jersey Rail Roads, and to Baltimore and the south, by the Northern Central Rail Road, which connects with the Pennsylvania Rail Road at Harrisburg.

The value of this communication with the great cities of New York, Philadelphia and Baltimore, by such direct routes and in such brief time, needs no comment. At a time when the manufacturers of the United States are essaying, and with success, to secure a share in the trade of foreign markets, for articles which England has sold heretofore, a direct connection with three such great sea ports within twelve hours time, acquires additional value in view of Pittsburgh's manufacturing ability. Nor must the fact be overlooked that Pittsburgh is the natural point of refining of that great staple oil which has attained already the third rank in our foreign exports, and of which the chief supply is from the two or three counties of Western Pennsylvania which lie just at Pittsburgh's door.

North-eastwardly by the ALLEGHENY VALLEY RAIL ROAD, the great trunk lines of the lake routes are reached, and a second direct connection with New York obtained.

South-eastwardly by the PITTSBURGH AND CONNELLSVILLE RAIL ROAD, at present known as the Pittsburgh Division of the Baltimore & Ohio Railroad, a second direct connection, by the BALTIMORE AND OHIO RAIL ROAD, from Cumberland, to which point the PITTSBURGH AND CONNELLSVILLE RAIL ROAD reaches, is secured with Baltimore.

The value of a direct communication between Pittsburgh and so important a sea board city as Baltimore, need not be pointed out. It is of itself suggestive. Neither is it necessary to dwell upon the importance of the connection thus made with the southern Atlantic States. The road brings Baltimore 31 miles nearer the Ohio river, (a great desideratum to heavy freights,) than she now is placed by her BALTIMORE AND OHIO RAIL ROAD route to Wheeling; and from the

character of the route of this road, having but one summit, the gradients are all level or descending eastwardly and westwardly; therefore it will attract travel and freights by its ability, from these causes, to carry cheap.

Thus, by her Eastern railways two direct connections are available with New York, and two with Baltimore; while the admirable advantages of the Pennsylvania Railroad give every facility to reach Philadelphia. There is no city whose railway system so comprehensively grasps, in a days travel, the three great sea ports of the nation; or to reverse the statement, no location where the three so great and important cities concentrate by their lines of railroads, traversed in such few hours, upon one community, so advantageously situated to distribute by water or by rail to the West. The advantages of this eastward portion of Pittsburgh's railway system, the city has not yet begun to feel; its power for increasing her commerce and her wealth is yet awaiting its hour in the future, and is a reserve whose value is not yet comprehended.

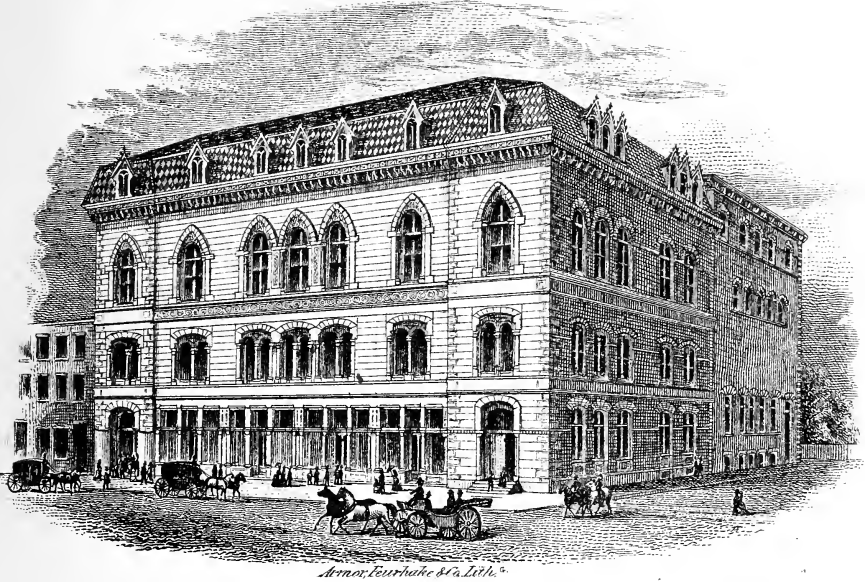
Westwardly, by the PITTSBURGH, FT. WAYNE AND CHICAGO RAILROAD, to Chicago. it embraces in its connections the entire net-work of roads which cover the States of Ohio, Indiana and Illinois, and reaches by various roads, through the States of Missouri and Iowa.

By the PITTSBURGH, CINCINNATI AND ST. LOUIS RAILROAD not only is a second avenue to Chicago and the North-west secured, but a direct route to St. Louis, 140 miles shorter than that by way of Buffalo and Cleveland. By this road a second and different connection is formed with the net of roads which so thoroughly intersect the States of Ohio, Indiana and Illinois, and the States beyond the Mississippi. It needs but a glance at a rail road map to see how great are the facilities possessed by Pittsburgh through these two western rail roads to distribute to nearly every county in those three great States, and to the Mississippi river towns, her manufactured products, or to receive from all those agricultural districts, their products.

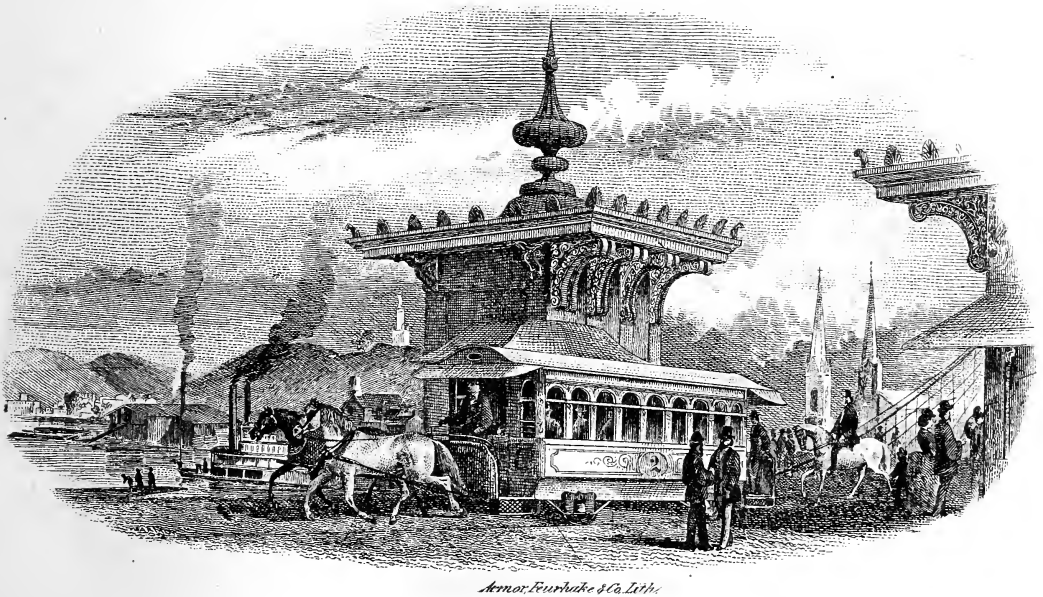
Northwardly, by the CLEVELAND AND PITTSBURGH RAIL ROAD, the Pittsburgh railway system reaches the Lakes at Cleveland, and by the steam boat routes on them, with which this road forms close connections, the rail roads of Chicago and Detroit, and thence westwardly. As a northern route this one is extremely valuable to Pittsburgh; affording an outlet to a vast expanse of country for her coal and her manufactured products. Nor will the facilities thus had be overlooked, to receive from the regions of Lake Superior and Canada their copper and iron ores, which Pittsburgh uses so largely.

By the PITTSBURGH AND ERIE RAILROAD another direct Northern route is had, as well as a second connection with the great East and West Lake lines of rail road, giving yet another facility for reaching the East, as well as the West and North.

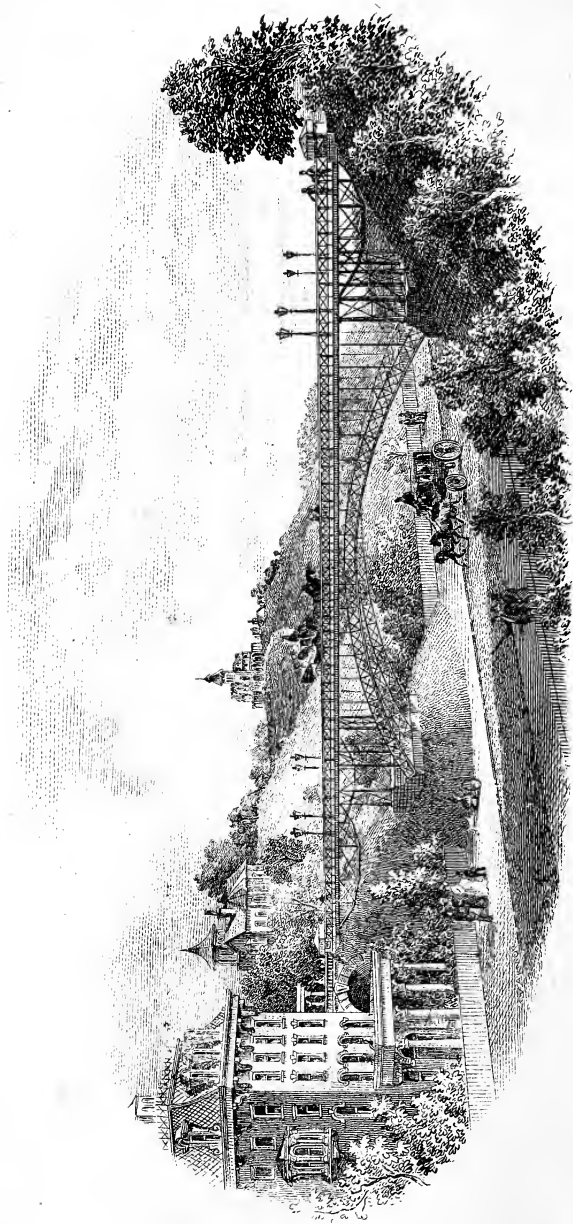
Of the Western Trunk lines, the PITTSBURGH, FT. WAYNE & CHICAGO is the oldest completed route of the system. In its course it runs through and into the territory of four States, and gives by its own direct line transportation to twenty-



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SIXTH STREET SUSPENSION BRIDGE.



FORBES STREET IRON BRIDGE.

one counties through whose area its rails run. On its direct connections, which are so immediate as to be only a fork in the line, it intersects nine other counties, being thirty counties whose trade, travel and products it grasps direct. Omitting any mention of all the others the road has access to by other connections, the value of those counties are shown by the following table:

State.	Counties	Cash Value Personal and Real Estate, 1870.	Populati'n 1870.	Cash Value Farms, 1870.	Cash Value Farm Products	Cash Value Live Stock.
Pennsylvania, .	1	34,065,895	36,148	14,198,713	2,069,312	1,576,277
Ohio,	11	244,931,060	293,853	123,114,044	23,212,080	15,676,342
Indiana, . . .	8	121,161,500	126,754	58,905,714	9,492,236	7,017,227
Illinois, . . .	1	575,000,000	349,966	22,873,349	4,033,256	2,612,441
Total, . . .	21	995,157,455	906,721	219,091,810	38,806,884	26,882,307

By connection at Gallion, with the Cleveland, Columbus & Indiana Railway.

State.	Counties.	Cash Value Personal and Real Estate, 1870.	Populati'n 1870.	Cash Value Farms, 1870.	Cash Value Farm Products 1870.	Cash Value Live Stock, 1870.
Ohio,	4	86,751,281	92,238	42,596,611	8,634,074	5,763,343
Indiana, . . .	1	15,000,000	19,030	10,025,183	1,746,273	1,187,038
Total, . . .	5	101,751,281	111,268	52,621,794	10,380,247	6,950,381

By connection at Indianapolis with Indiana & Vincennes Rail Road.

State.	Counties.	Cash Value Personal and Real Estate, 1870.	Populati'n 1870.	Cash Value Farms, 1870.	Cash Value Farm Products 1870.	Cash Value Live Stock, 1870.
Indiana, . . .	4	40,723,375	74,801	24,729,016	5,612,688	4,074,552

The second Western trunk is the PITTSBURGH, ST. LOUIS & CINCINNATI RAIL ROAD. The value of this direct Western route is seen by a glance on a complete rail road map. In its direct course it passes through and into six great States, and thirty-one counties of those States. The value of the population, wealth and products of those counties, and the importance of the route as in-

stanced by the value of personal and real estate, value of farms and farm products, as stated by the census of 1870, is shown in the following table:

States.	Counties.	Cash Value Personal and Real Estate. 1870.	Population. 1870.	Cash Value Farms. 1870.	Cash Value Farm Products, 1870.	Cash Value. Live Stock, 1870.
Pennsylvania, .	1	69,288,390	48,483	39,015,600	4,526,239	3,938,335
West Virginia, .	1	4,060,127	4,363	2,317,814	347,055	218,840
Ohio,	13	425,885,906	472,805	200,454,673	35,852,054	22,121,605
Indiana, . . .	9	233,819,990	266,156	105,025,363	16,612,261	12,400,111
Illinois, . . .	6	88,307,356	123,316	42,573,200	10,515,962	6,084,888
Missouri, . . .	1	511,035,000	351,189	28,409,635	3,566,487	1,333,793
Total, . . .	31	1,332,396,763	1,276,312	417,796,285	71,420,047	46,097,572

This trunk route, by its direct connection with the COLUMBUS, CHICAGO & INDIANA CENTRAL, reaches eleven other counties in Indiana, other than those in the table above, which had, in 1870, a population of 134,025; personal and real estate to the value of \$99,221,323; farms of a cash value of \$55,476,850; producing farm products to the value of \$11,657,183, and live stock worth \$8,782,514. By its connection with the TOLEDO, PEORIA & WABASH RAILROAD, nine more counties, other than those previously given, are reached direct, having, in 1870, a population of 262,118, with personal and real estate of the cash value of \$176,582,022, with farms of a cash value of \$108,350,561, yielding farm products worth, at cash valuation, \$23,825,592, and with live stock worth \$19,850,000, cash.

The value of these two trunk western lines, with their four distinct and direct connections,—as shown by these statistics of the very elements that go to support railways, consume manufactures and create commerce, is very great; not to mention in the slightest the many indirect connections, whose similar resources also tend to these trunk lines, and to Pittsburgh. It would appear that the population is, in the aggregate, 2,765,845, the value of real estate and personal of \$2,745,323,809, or more than the entire national debt, while the value of the farms was \$878,066,316, the cash value of the farm products \$161,702,641, or more than the annual interest upon the national debt, while the value of the live stock was \$103,854,712. These statistics are those of the census of 1870, six years ago. With two trunk lines running their daily trains through such immense wealth, it needs not much comment to show the value of Pittsburgh's railway system as a sustainer of her business and a promoter of her growth. When to these is added that of the balance of her contemplated trunk lines, it is evident that Pittsburgh's continued prosperity, with a railway system giving access to such wealth, in addition to the other enormous sums shown by the census of 1870 to lie along the course of her accessible river, can be a subject for no doubt, however it may be temporarily effected by those periodical depressions of business to which the country has been subject.

But to return to the exhibit of the statistics of the trunk routes of the Pittsburgh railway system. The CLEVELAND AND PITTSBURGH RAILWAY runs through four counties of Ohio having, a population of 220,987, a cash value of real and personal estate of \$195,703,000, with farms \$75,939,385 cash value, yielding \$10,521,143 of products, and having \$7,041,313 of live stock.

The PITTSBURGH AND ERIE RAIL ROAD, running through three counties of Pennsylvania, is sustained by a population outside of Pittsburgh of 143,239, whose real and personal estates was valued in 1870 at \$105,163,728 cash, having farms whose cash value is given at \$57,653,950, which produce farm products, at a cash value, of \$9,854,845, and held live stock to the value of \$7,088,019.

The statistics of the PITTSBURGH AND CONNELLSVILLE RAIL ROAD, running through but three counties of Pennsylvania, and connecting at Cumberland with the BALTIMORE AND OHIO RAIL ROAD, shows that, by the census of 1870, those three counties had a population of 130,239, real and personal estate to the value of \$125,802,365, farms worth in cash \$58,505,499, yielding \$9,129,959 of farm products, and having live stock to the value of \$6,789,758. While this shows the money value of the three counties through which it runs, the figures are not a fair representation of the value of this trunk line, which it is to the east and south-east, in connection with the BALTIMORE AND OHIO RAIL ROAD.

The ALLEGHENY VALLEY RAIL ROAD is the sixth trunk line of the Pittsburgh system, which piercing a diverse section from the other lines, pours her trade into Pittsburgh, and is not only aiding to sustain the prosperity of the past, but working to increase it in the future.

The route of this road is chiefly in Pennsylvania, although it penetrates into New York, and there forms connections with the New York system of roads.

The following table shows the statistics and population, and product values of this line:

State.	Counties.	Cash Value Personal and Real Estate, 1870.	Cash Value Farms, 1870.	Populat'n 1870.	Cash Value Farm Products 1870.	Cash Value Live Stock, 1870.
Pennsylvania, .	8	188,415,130	97,023,894	276,905	17,308,583	13,580,359
New York, . .	1	48,607,170	33,061,755	59,227	6,103,495	4,880,586
Total, . . .	9	237,022,300	130,085,549	336,122	23,412,078	18,460,945

By direct connection with the OIL CREEK RAIL ROAD, it also reaches two other counties in Pennsylvania, whose population is 27,907, have real and personal property to amount of \$14,175,395, and farms of a cash valuation of \$7,596,072, yielding \$1,847,742 of farm products, and having \$1,190,617 of live stock. These figures but poorly show the money importance of this line. Running through the great oil region, the staple of that section is not given in the farm products, although the oil is taken from those very farms. Upon this point it is

sufficient to state that the exports of this article now rank third on the list of exports from the United States, and that in addition to this is to be computed the entire consumption of the United States. For the carriage of this mineral, the Allegheny Valley Rail Road gives most admirable facilities for its transportation to Pittsburgh for refining and shipment thence to the east for exportation. Of the present value of this trade to Pittsburgh the chapter on her oil trade presents the facts.

The seventh trunk line is the PENNSYLVANIA RAIL ROAD. By this road and its branches, full access is had to the interior of the State. Running for a distance of 350 miles through the heart of the State, it affords a great facility for the reception of the metal from the numerous furnaces of Pennsylvania, the lumber of the mountain regions, and for eastward shipments to New York, Philadelphia and Baltimore, either of home manufactures, or those products of other States, seeking eastern and European destinations, which are transported by the rivers to Pittsburgh.

These are the leading trunk roads of the Pittsburgh railway system, and are sufficient to indicate its power in Pittsburgh's future, to increase her growth and aid her business.

There are several minor roads whose future is yet undeveloped, which belong to the same system of roads. Among these is the PITTSBURGH, VIRGINIA AND CHARLESTON RAIL ROAD. This road, running southwardly up the course of the Monongahela river, is designed to connect the points its name indicates, and form a connection with the southern net work of rail roads, as the Pittsburgh, Ft. Wayne & Chicago and Pittsburgh, Cincinnati & St. Louis does with the West. In so doing it will open to Pittsburgh a great facility for reaching the rich iron ores of Virginia, and also communicate with a very valuable lumber district, especially for ship timber. When completed, it will be—in the facilities it will afford to Pittsburgh of reaching southern markets with her manufactures, and receiving from them their staples—one of the most important of her trunk roads.

Of the various projected roads, it is not requisite here to speak; as of their routes or their trade statistics no data could be given. That several of these will hereafter add to the railway facilities of Pittsburgh is one of the certainties of the city's future.

This brief exposition that is here given of Pittsburgh's railway system shows its power. Its lines reaches to the East, North-East, South-East, South, West, North-West, and North; it reaches the great sea ports of the Atlantic coast with a singular directness and force; it lays hold on the great lakes as strongly; it reaches into and covers the West with a wonderful grasp, and, as shown, is preparing to lay a similar broad hand on the South. This presentation of Pittsburgh as a railway centre suggests at once a greatness for the city increasing with the wants and products of the greater portion of the union.

CHAPTER V.

HALF A CENTURY OF MANUFACTURING.

PROGRESS OF MANUFACTURES FROM 1804 TO 1857.

The expression, "Pittsburgh Manufactures," is one of the utmost familiarity, all over the West and South-West, and hardly less so in the East. In the large cities and in the growing towns, the announcement of "Pittsburgh Manufactures" appears in the daily advertisements of the merchants; and at the stores of the cross roads of the fresh grown village, it is a conspicuous item upon the signs of their proprietors. Before entering into an exposition of their present value, it will be interesting to trace their early growth.

In 1804, Cramer's Almanack says, "Do not be surprised when you are informed that the averaged value of the articles manufactured in Pittsburgh for 1803, amounts to upwards of \$350,000." From the same book the following table is extracted verbatim:

A VIEW OF THE MANUFACTURING TRADE OF PITTSBURGH, WITH THE AVERAGE AMOUNT OF EACH ARTICLE, AS MADE FROM RAW MATERIAL AND FIT FOR THE MARKET, FOR THE YEAR 1803.

Glass, window bottles, Jars, decanters, tumblers, blue glass, . . .	\$12,500 00
Glass-cutting—N. B. equal to any cut in the states of Europe, . .	500 00
Tin ware—320 boxes, 40 dollars each,	12,800 00
Barr iron, mill, ship-work, axes, hoes, plough irons, &c.—50 Tons, at 17 cts per lb,	19,800 00
Brass hand irons, still cocks, &c.,	2,800 00
Cutlery, augers, chisels, hackles, planing bits, drawer knives, &c., .	1,000 00
Cut and hammered, nails, 40 tons, 18 cts. per lb,	16,128 00
Bells, cow,	200 00
Guns, rifles, &c.,	1,800 00

Clocks, silversmith work,	3,000 00
Screens for small grain—3, 40 dollars each,	120 00
Scythes and sickles,	1 500 00
Cut stones, grind, tomb stones, &c.,	2,000 00
Cabinet work, much exported,	14,000 00
Carpenters Planes,	850 00
Wagons, carts, &c.,	1,500 00
Barrels, tubs, and buckets,	1,150 00
Kentucky and keel bottom boats, ships of burden, and barges,	40,000 00
Windsor chains—180 doz., 15 dollars per doz.,	2,700 00
Spinning wheels—400, 3 dollars each,	1,200 00
Pumps,	500 00
Carpenter work,	13,500 00
Candles—12,000 lbs., 20 cts. per lb.,	2,400 00
Soft soap—800 bbls., 4 dollars per bbl.,	3,200 00
Beer and porter—900 bbls., 5 dollars per bbl.,	4,500 00
Bread and biscuit flour—1400 bbls., 6 dollars per bbl.,	8,400 00
Shoes—5180 pairs, 75 cts. per pair,	9,065 00
Boots—550 pairs, 6 dollars per pair,	3,300 00
Saddles—450, 15 dollars each,	6,750 00
Bridles—1,500, 50 cts. each,	2,250 00
Harness work,	500 00
Buck-skin breeches, and dressed skins,	2,300 00
Cloaths, price of labor only,	5,950 00
Segars, snuff, and pigtail tobacco,	3,000 00
Ropes, cables, beds cords, &c.,	2,200 00
Matrasses—19, 20 dollars each,	380 00
Dyed cotton, and flaxen yarn (labor)	450 00
Carded and spun cotton by the carding engine and spinning jenny,	1,000 00
Woved striped cotton—5,500 yards, 1 dollar per yard,	5,500 00
Linen, 700,—3000 yards, 40 cts. yer yard,	1,200 00
Tow linen—1500 yards, 25 cts. per yard,	375 00
Lindsey woolsey—3,500 yards, 60 cts per yard,	2,100 00
Carpeting, rag—1,200 yards, 75 cts per yard,	900 00
Stockings, wove,	500 00
Coverlid and diaper weaving,	500 00
Weavers' reeds,	200 00
Hats, wool and fur—2,800, 5 dollars each,	14,000 00
Chip hats—90 doz., \$7.50 per doz.,	675 00
Leather, tanned,	10,000 00
Brushes all kinds, Russia bristles,	2,500 00
Bricks—1,250,000, 4 dollars per thousand,	5,000 00
Crockery ware,	3,500 00

Mason work,	10,500 00
Plastering and painting,	3,500 00
Paper made up into books,	1,000 00
Total,	\$266,403 00

THE FOLLOWING ARTICLES OF COUNTRY MANUFACTURES MAY BE CONSIDERED THE PRINCIPAL IN WHICH THE BARTERING TRADE IS CARRIED ON IN THIS PLACE.

Whiskey—2,300 bbls., 12 dollars per bbl.,	\$27,600
Linen, 700—28,000 yards, 40 cts per yard,	11,200
Lindsey woolsey—4,000 yards, 50 cts per yard,	2,000
Tow linen—9,000 yards, 25 cts per yard,	2,250
Twilled bags—3,000, at \$1 each,	3,000
Striped cotton,—3000 yards, 80 cts. per yard,	2,400
Raw cotton from Tenn.—30,000 pounds, 25 cts per pound,	7,500
Maple sugar—15,000 pounds, 12 cts. per pound,	1,800
Lake salt, Onidago—1000 bbls., 12 dollars per bbl.,	12,000
Castings—50 tons, 100 dollars per ton,	5,000
Barr iron—80 tons, 160 dollars per ton,	12,800
Flax, hemp, oats, cheese, &c.—say,	5,000
Total,	\$92,505

The following is from Cramer's Almanack, of 1806: "We feel peculiar pleasure in noticing the improvements of our town; two very important manufactories have been lately erected and are now in operation. The one a cotton manufactory, which can spin 120 threads at a time, with the assistance of a man and boy. The big cylinder of the carding machine has on it 92 pair of cards attended by a boy; the reeling is done by a girl. The other is an air foundry, for the purpose of casting iron pots, kettles, mill irons, &c. * * * * *

We also learn that a machine for carding wool is about to be erected." The same page contains the following: "Mr. Lintot has been engaged some time in building a boat to go up stream with the assistance of horses. If the plan succeeds it will be attended with many important advantages to those concerned in the trade of the rivers."

1807. It is mentioned that "this town is growing rapidly into importance." The following manufactories are recorded: "O'Hara's glass factory, producing yearly \$18,000; Kirwin & Scott's cotton factory; M'Clurg's air furnace; Poter's Stringer's and Stewart's nail factories, producing 40 tons annually. Two extensive breweries (O'Hara's and Lewis',) whose beer and porter is equal to that so much celebrated in London; two rope walks (Irwin's and Davis'); three copper and tin factories, (Gazzam's, Harbeson's and Bantin and Milterberger's.)"

1808. There were in the town the following "master workmen in each particular branch of business carried on in Pittsburgh:"

1 Cotton Factory,	1 Wool and Cotton Cord	17 Blacksmiths,
1 Green Glass works,	manufacturer,	1 Machinist and White-
2 Breweries,	4 Plane makers,	smith,
1 Air Furnace,	6 Milliners,	1 Cutter and tool maker.
4 Nail Factories,	12 Mantua makers,	32 House Carpenters and
7 Coppersmiths,	1 Stocking weaver,	Joiners,
1 Wire Manufactory,	1 Glass cutter,	21 Boot and Shoe makers,
1 Brass Foundry,	2 Book Binderies,	1 Ladies' shoe maker,
6 Saddlers,	4 House and sign painters	5 Windsor chair makers,
2 Gunsmiths,	2 Tinnners,	1 Split-bottom chair ma-
2 Tobacconists,	1 Sail maker,	ker,
1 Bell maker,	2 Mattress makers,	13 Tailors,
1 Scythe and sickle maker	1 Upholster,	3 Spinning-wheel spindle
5 miles up the Allegh'y	3 Wagon makers,	and crank makers,
2 Soap boilers and tallow	5 Watch and Clock ma-	1 Breeches maker,
chandlers,	kers and Silversmiths,	1 Glove maker,
1 Brush maker,	5 Brick Layers,	12 School Mistresses,
1 Trunk maker,	4 Plasterers,	33 Tavern keepers,
5 Coopers,	3 Stone Cutters,	50 Store keepers or mer-
10 Blue dyers,	5 Boat Builders,	chants,
13 Weavers,	2 Ship Builders,	4 Printing offices,
1 Comb maker,	1 Saddletree maker,	1 Copper plate printer,
7 Cabinet makers,	1 Flute and Jewsharp ma-	5 Brick yards,
1 Turner,	ker,	3 Stone masons,
6 Bakers,	1 Pump maker,	2 Booksellers,
8 Butchers,	1 Bell hanger,	1 Harness maker,
2 Barbers,	2 Looking-glass makers,	1 Horse farrier,
6 Hatters,	1 Ladies' lace "	1 Starch maker,
4 Physicians,	1 Lock maker,	1 Gardner and seedman,
2 Potteries,	7 Tanners,	3 Board & lumber yards.
2 Straw Bonnet makers,	2 Rope walks,	
1 Reed maker,	2 Spinning Wheels,	

Some of the comments upon the various occupations, as given in the account from which we copy, are illustrative of the times, viz: The cotton factory is mentioned as producing cotton yarns, &c. "to the great credit and profit of its industrious proprietor." The comb maker "wants horns, and gives for good ones \$3 per 100." "Two rope walks (at which hemp is much wanted)." The machinist is announced as "equal if not superior to any workman in the United States."

In addition to the manufactories enumerated in 1808, there were in 1809,

1 "White Glass Works, Messrs. Robinson & Ensell, in which is manufactured all kinds of Glass-ware of a good quality."

1 "Bell-metal Button manufactory, by Thomas Neal—the buttons well made and sell as manufactured—60 cents per gross. He gives the highest price for old pewter, brass and copper."

1 Pipe manufactory by Mr. Price.

1 Cotton " by Mr. Scott,

1 Patent boot and shoe maker. "The heel and soal is tacked—without a stitch—and are strong. Abel Smith is the patentee."

1810. According to "A cursory view of the principal manufactures in and adjacent to Pittsburgh" there were in the town—

Three Glass Works "in handsome operation," producing flint glass to value of \$30,000

Producing Bottles and window glass, to value of 40,000

Two Cotton Mills "are working 60 spindles, the other contemplates working shortly 234 spindles." Their manufactures are set down at a value of 20,000

"Their machines are set in motion by the power of horses."

One Air Furnace, which "lately cast 70 tons of cannon balls for the United States."

One Iron grinding mill, "recently got into operation."

"A manufactory of white metal buttons to the extent of 40 or 60 gross a week."

Of Ironmongery, there were made "of chisels, claw hammers, steel-yards, shingling hatchets, drawing knives, cutting knives, shovels, tongs, hackels, gimlets, augers, squares, door handles, Jack screws, files, stock locks, spinning-wheel irons, axes, hoes, chains, kitchenware, &c." to amount of 15,000

Of Nails, there were "manufactories of these in town which make about 200 tons cut and wrought nails of all sizes annually."

It is mentioned of bridle bits and stirrups, that "a manufactory of these has been recently established."

Of tin, copper and Japan ware there were "six manufactories briskly carried on," manufacturing to amount of 30,000

Wire weaving was carried on to a considerable extent.

Of Glass cutting it is recorded, "The business has been recently established by an ingenious German, (Eichbaum,) formerly glass cutter to Louis XVI, late King of France. We have seen a *six light chandelier* with prisms of his cutting which does credit to the workman and reflects honor on our country, for we have reason to believe it is the first ever cut in the United States. It is suspended in the *Ohio Lodge*, No. 113, in the house of Mr. Kerr, innkeeper."

About 52,800 yards were annually woven of linsey-woolsey, cotton, and linen mixed, averaging 66 cents per yard, worth 38,848
 Of Linen, Cramer's Almanack says, "About 80,000 yards of flaxen linen, coarse and fine, are brought to the Pittsburgh market yearly." The average price appears to have been about 60 cents.

Of this article the same publication says: "We feel a pleasure in having seen a fine piece of linen made by Mrs. James Gormly of this place; it is spun six dozen cuts to the pound, and is 1600 in quality, it sold for \$1.50 per yard." *
 * * * * * "Let it no longer be foolishly and roundly asserted that American flax will not make, nor that American women cannot spin fine linen."

In connection with this it will not be out of place to say, that all the publications of about this date, contain articles, and many from distinguished citizens, urging the manufacture of linen, and attention to the culture of flax. Pittsburgh appears to have been then looked to as the most important point for the establishment of such factories.

Says one publication of the manufacture of fine thread: "We are happy to find that fine and beautiful thread is now spun and brought to our market. We have seen some of twelve dozen cuts to the pound, about the quality of No. 28 imported."

Of Rope Walks there was but one, and that on a small scale.

3,000 pounds of rappee snuff and 800,000 segars were manufactured principally from Kentucky tobacco, at that date.

We quote the writer in full upon the two articles, flour and whisky: "Of these articles a vast and unknown amount is made throughout this country. There is too little foreign demand for the former and too great a home consumption of the latter."

Of boat and ship building, the publication from which we extract, says: "Kentucky and New Orleans boats, keels, barges, skiffs, &c. are made in great numbers on all our rivers. And there is a vessel of 150 tons now building on the Allegheny, by Mr. Robbins."

At that date one steam mill had been erected by Owen and Oliver Evans, of Philadelphia, at a cost of \$14,000. "She is calculated for three pairs of stones, which it is expected will make 100 barrels of flour in the 24 hours."

In that year it was estimated that within sixty miles of Pittsburgh, "about 4,000 tons of bar iron, 18,000 tons of pigs and castings, and 400 tons of slat iron were made annually. Exclusive of what is made at these forges, there are about 500 tons of rolled and bar iron come to our market annually from forges in the mountains."

The business of saddlery is "carried on briskly to the value of about \$40,000."

The account of boots and shoes says "there are made in this place to the amount of 45,000 pairs of shoes and 15,000 pairs of boots, annually."

In 1812, an article for Cramer's Pittsburgh Magazine Almanack of that year, set down the manufactures of Pittsburgh as follows, from the enumeration by the marshal, in 1810:

One steam grist mill, manufactures 60,000 bushels of grain.	Three tobacconists,	11,500
Three carding and spinning mills manufacture to value of \$14,248	Six tanneries,	15,500
One flat iron mill, manufacture to value of	Seventeen smitheries,	34,400
2,000	Four cooperies,	2,250
Two distilleries, make 600 barrels of whisky.	Saddles, boots and shoes,	65,878
Four brick yards, make to amount of	Ten hatteries,	24,507
13,600	Four silversmiths and watch-makers,	9,500
One rope walk, makes to amount of	Six copper, brass and tin factories,	25,500
2,500	Three stone cutters,	8,800
Two air furnaces, make 400 tons, to amount of	Three boat and ship builders,	43,000
40,000	Two wagon makers,	2,872
Three red lead factories,	Three chandlers,	14,500
13,100	One button manufactory,	3,000
Six nailories, make to amount of 49,890	One stocking weaver,	
Three glass works,	One cutlery,	3,000
62,000	One glass cutting,	1,000
Two potteries,	One wire weaving establishment.	
3,400	Three printing establishments.	
Two gunsmitheries.	One book bindery.	
2,400		
Sixteen looms, manufacture 19,-443 yards of cloth.		

Upon this statement the writer of the article remarks that some of the estimates are too low for the time, especially in the saddlery line, which was ascertained in 1807, with some degree of accuracy, to amount to \$40,000. In the same year, boots and shoes were made to amount to \$70,000. The value of the above manufactures is given at \$2,000,000. The same article also mentions that the manufacture of coffee mills and locks by James Patterson, an English artist, has lately commenced.

In 1813, there were five glass factories in the town, producing flint and green glass to amount of \$160,000; two large air foundries, M'Clurg's & Beelen's, casting about 600 tons a year, worth \$54,000; also, one small one, carried on by Mr. Price, for casting butt hinges, &c.; one extensive edge tool and cutlery manufactory, Messrs. Brown, Barker & Butler; one steam works, carried on by Messrs. Foster & Murray, for making shovels, spades, scythes, &c.; one rolling mill (erecting) by C. Cowan, with a capital of \$100,000; one lock factory (Patterson's); one factory (Updegraff) for files, door handles, &c.; two steam engine works (Stackhouse & Rodger's and Tustin's); one steel furnace (Tuper & M'Kowan); one wool carding machine factory (James Cummins); one woollen factory (James Arthurs); one flannel and blanket factory (Geo. Cochrane); one

cloth steam machine factory (Isaac Wickersham); two manufacturers of stirrup irons and bridle bits; one wheel iron factory (Stevenson & Youard); one wire mill, (Eichbaum & Sons); one button factory (Reuben Neal); one knitting needle factory (Frithy & Pratt); two silver platers (Benj. Kindricks and Mr. Ayers); one morocco factory (Scully & Graham); one white lead factory (Beelen); one suspender factory (William Gore); one brass foundry (Thomas Cooper); one trunk factory (J. M. Sloan); one brush factory (Mr. Blair); six saddle factories; two breweries; one steam flour mill; one rope walk (John Irwin & Co.); eleven copper factories, and three plane factories (Wm. Scott and Lithgrow).

The following account of manufactures carried on in the city and vicinity was collected under the direction of Councils, and reported to them in January, 1817, by their Committee:

Business.	No.	Hands.	Amount	Business.	No.	Hands.	Amount
Auger maker, . . .	1	6	\$ 3,500	Plane maker, . . .	3	6	57,600
Bellows maker, . .	1	3	10,000	Potter fine ware, . .	1	5	8,000
Blacksmith, . . .	18	74	75,100	Rope maker, . . .	1	8	15,000
Brewers,	3	17	72,000	Spinning machine			
Brush makers, . .	3	7	8,000	maker,	1	6	6,000
Button maker, . .	1	6	6,250	Spanish brown manu-			
Cotton spinners, .	2	36	25,518	factory,	1	2	6,720
Copper and tin smiths,	11	100	200,000	Silver plater, . . .	1	40	20,000
Cabinet makers, . .	7	43	40,000	Steam engine makers,	2	70	125,000
Currier,	1	4	12,000	Steam grist mills, .	2	10	50,000
Cutlers,	2	6	2,000	Saddlers,	6	60	86,000
Iron foundries, . .	4	87	180,000	Silversmiths, &c., .	5	17	12,000
Gunsmiths and bit				Shoe and boot makers,	14	109	120,000
makers,	3	14	13,800	Tanners,	7	47	58,860
Flint glass factories,	2	82	110,000	Tallow chandlers, .	4	7	32,600
Green glass factories,	3	92	130,000	Tobacconists, . . .	4	23	21,000
Hardware merchants,	2	17	18,000	Wagon makers, . .	5	21	28,500
Hatters,	7	49	44,640	Weavers,	2	9	14,562
Locksmith,	1	7	12,000	Windsor chair makers,	3	23	42,600
Linen manufactory,	1	20	25,000	Woolen manufacturers,	2	30	17,000
Nail manufactory, .	7	47	174,716	Wire drawer, . . .	1	12	6,000
Paper maker, . . .	1	40	23,000	White lead factory, .	1	6	40,000
Pattern maker, . .	1	2	1,500				

Making 148 manufactories, employing 1280 hands, and producing \$1,896,366 worth of articles.

In addition there were the following trades returned by committee, of which no details of hands and products were furnished by "conductors:"

Chair makers,	3	Printers,	6
Currier,	1	Plane makers,	1
Cabinet makers,	2	Blacksmiths,	21
Cotton carder,	1	Shoemakers,	23
Comb maker,	1	Saddlers,	2
Coach maker,	1	Silk Dyer,	1
Copper plate printer,	2	Stone cutters,	6
Book binders,	3	Tallow chandlers,	3
Hatters,	4	Tanners,	5
Gilder,	1	Weavers,	15
Machine makers,	2	Wire worker,	1
Nailers,	5	Coffee mill maker,	1

These latter employing 357 hands, and produce \$700,000 of manufactures. Being 259 factories, employing 1637 hands, and producing \$2,266,366 of manufactures.

In 1825, the Gazette of November 19th says, there are seven rolling mills, eight air foundries, six steam engine manufactories, and one extensive wire manufactory.

In the same year, and at the same date, Niles' Register states that window glass is made to the amount of 27,000 boxes, having a value of \$135,000, and flint glass to the value of \$30,000—about \$100,000 of which is exported.

In 1829, the Pittsburgh Gazette says, "There are in Pittsburgh nine foundries that consume 3,500 tons of metal, and employ 225 hands; eight rolling mills, using 6,000 tons of blooms, 1,500 tons pig iron, and employing 300 hands; nine nail factories, employing 150 hands and producing eighteen tons of nails; seven steam engine factories, employing 210 hands, and that the total consumption of iron was 6,000 tons pig and an equal quantity of blooms."

In 1830, there were 9,282 tons of iron rolled and 100 steam engines built.

In 1831 there were eight glass houses, four flint glass, 32 pots, four window glass, employing 102 hands, using 7,000 cords of wood, 700 tons of sand, 1,000 barrels of salt, 40,000 pounds of potash, 150,000 bushels of coal, producing about \$500,000.

Twelve foundries in and near Pittsburgh which consumed 87,000 bushels of coal; cast 2,963 tons of metal; employed 132 hands; produced to value of \$189,614.

There are the following rolling mills and nail factories :*

Mills.	Weight of Metal.	Value.
Union,	720,000	\$43,000
Sligo,	400,000	32,000
Pittsburgh,	782,887	86,544
Grant's Hill,	500,000	20,000
Juniata,	500,000	30,000
Pine Creek,	457,000	34,100
Miscellaneous,	360,000	28,200

There were in operation 37 Steam Engines.

In 1836 there was given by authority quoted,† the following statement of rolling mills:

Mill.	Firm.	Tons Pigs.	Tons Blooms.	Bush. Coal and Coke.	Hands.	Engines.
Kensington, .	Leonard, Semple & Co., .	2,500	500	250,000	170	2
Pennsylvania,	Miltenerberger & Brown, .	3,500	1,500	360,000	110	2
Juniata, . .	G. & J. H. Shoenberger, .	—	4,000	180,000	90	2
Sligo, . . .	Lyon, Shorb & Co., . . .	—	4,600	220,000	90	—
	Lippincott & Bro., . . .	—	800	75,000	50	—
Bowen, . .	Smith, Royer & Co., . .	2,500	500	250,000	150	—
	Bissell & Co.,	2,450	1,100	200,000	100	—
	Beelen & Co.,	—	4,500	41,500	240	—
	H. S. Spang & Son, . . }					

Nine mills; 28,000 tons of pig and blooms; 1,000 hands; 2,000,000 bushels of coal, and \$4,160,000 product.‡

Eighteen foundries, engine and machine shops, consuming 500,000 bushels of coal and coke, 12,000 tons of pig metal, 3,000 tons of sheet and boiler iron; employing 1,000 hands; produce \$2,130,000 manufactures. Of these, McClurg, Wade & Co., Arthurs, Stewart & Co., Robinson & Minnis, Arthurs, Nicholson & Co., Bemis & Co., Stackhouse & Tomlinson, Warden & Benny, Freeman & Miller, Kingsland & Lightner, are nine of the firms—four being engine manufacturers, four foundries for all description of castings. The eight used 6,500 tons of pigs, and employed 780 hands. Four of the engine shops turned out in the year 56 engines and 158 boilers.

* Peck and Tanner's Guides, 1831,

† Lyford's Western Directory.

‡ In this valuation is included bar and sheet iron, shovels, axes, hoes, saws, steel, nails, spikes, wire, &c.

The following establishments are given from data collected from Lyford's and Harris' Directory, 1837, and other publications:

GLASS WORKS.

Style.	Firm.		Hands.	Value.
	Bakewell & Co.,	Flint, . .		
Stourbridge, . .	Robinson, Anderson & Co., . .	" . .	65	\$ 90,000
Pennsylvania, . .	Whitehead, Ihmsen & Phillips, . .	" . .	114	120,000
" . .	" " " . .	Black, . .	32	60,000
Birmingham, . .	C. Ihmsen & Co.,	Vial, . .	32	38,500
" . .	"	Window, . .	36	38,500
	Park, Campbell & Hanna,	Flint, . .	40	50,000
	O'Leary, Mulvany & Co.,	" . .	45	60,000
	Curling, Robertson & Co.,	" . .	50	70,000
	S. M'Kee & Co.,	Window, . .	40	38,500
	W. M'Cully,	} Window, . .		62,550
	W. A. Buchanan,			
	F. Lorenz,			

COTTON FACTORIES.

Style.	Firm.	Bales Cotton.	Spindles.	Hands.	Looms.	Value.
Phoenix,	Adams, Allen & Co.	1,100	5,000	220	76	\$150,000
Pittsburgh, . . .	Blackstock, Bell & Co.,	1,500	5,000	210	42	200,000 .
Hope,	Marshall, M'C. & Co.,	1,500	5,000	200		180,000
Eagle,	Arbuckle & Avery,	1,300	3,600	150		150,000
Union,	George Beale,	450	2,200	70		50,000
Globe,	Lewis Peterson,	350	1,000	50		40,000
Total, 6,		6,200	21,800	900	118	\$770,000*

Lyford gives the spindles of the same factories at 28,900; operatives at 1,030, and states that 2,100,000 yards of brown sheetings are made.

BREWERIES.

Style.	Firm.	Hands.	Barrels.	Value.
Point,	G. J. & P. Shiras,	20	6,000	\$38,000
Pittsburgh, . . .	Brown & Verner,	21	6,000	40,000
Wainwright's, . .	J. Wainwright,	4	1,000	6,000
Franklin, . . .	Coltart & Dilworth,	9	2,500	16,500
Allegheny, . . .	W. A. Irwin & Co.,	7	3,300	18,000
Total, 5,		61	18,800	\$118,500

*Harris' Directory, 1837.

LEAD FACTORIES,

	Kegs.	Pounds.	Value.
Avery & Ogden,	24,000	600,000	\$60,000
H. Brunot,	8,000	200,000	22,000
B. M'Clellan & Co.,	6,000	150,000	18,000
Madeira & Aston,	8,696	174,000	24,000
J. Hannen,	5,600	140,000	16,000
Daniel King,	4,800	120,000	14,000
Porter & Breckenbridge,	7,000	175,000	21,000
Gregg & Hagner,	10,000	360,000	31,000
Total, 8,	74,496	1,819,000	\$206,000

ROPE WALKS.

	Tons Hemp, &c.	Hands.	Value.
John Irwin & Son,	300	50	\$100,000
Smith & Guthrie, (new,)	400	50	120,000
Long & Co.,		7	30,000

In 1836, Mr. Lyford, in his Western Address Directory, figures up the business of Pittsburgh as follows:

Steamboats,	\$ 960,000
Rolling Mills, proceeds of,	4,160,000
Iron Foundries, Engine and Machine Shops, proceeds of,	2,130,000
Flint Glass Works, proceeds of,	560,000
Window-Glass and Hollow ware, value of,	700,000
Cotton Factories, proceeds of,	500,000
Rope Walk, " "	80,000
Paper Mill, " "	20,000
Chemical Factories and Lead Works, proceeds of,	241,000
Linseed Oil, value of,	50,000
Ploughs, " "	174,000
All other manufactures,	6,000,000
Total,	\$15,575,000

In 1837, Harris' Directory sums up the manufactories of the city thus:

6 Cotton factories,	\$ 770,000
8 White lead factories,	206,000
Manufactories of Birmingham,	2,491,000
6 Iron manufacturing establishments and rolling mills east of Monongahela,	1,957,500
9 Iron foundries,	500,000
10 Steam engine factories, and foundries attached,	700,000
7 Glass manufactories, east of Monongahela,	430,000

3 Rope-walks,	250,000
3 Iron manufactories of saws, shovels, spades, hoes, axes, nails, &c.,	230,000
Livingston's platform scale manufactory,	60,000
Ingersol's steam hat body manufactory,	11,250
All other manufactories and mechanical productions of the city and environs,	4,000,000
Total manufactories, &c.,	\$11,606,350
The mercantile business is summed up at,	13,100,000
The commission business at,	5,875,000
The coal trade,	565,200
Making a total of,	\$31,146,550

In 1840 there were returned by the census of that year as in Pittsburgh, Allegheny and Birmingham:

28 Lumber yards, with a capital of	\$ 226,300
27 Furnaces and 7 forges, with a capital of	1,500,000
10 Glass-houses and 6 glass cutting works, with a capital of	220,000
5 Cotton factories with 17,270 spindles.	
1 Pottery, 1 fulling mill, 6 tanneries, 5 breweries, 2 flouring mills, 1 oil mill, 1 rope-walk, all of which employed a capital of	2,111,390

In 1857 a volume entitled "Pittsburgh As It Is," publishing the trade statistics of the city in 1856, in which year the facts and figures were gathered, shows the business and manufactures of the city, *so far as they could be obtained*, to be as given in the following tables and statements. This is *exclusive of the retail trade*. Much of the manufacturing business, like the making of bricks, gas, houses, and such similar employments of the population, which, though part of its business and proper to be included, were not given, as the figures were unattainable, as were the statistics of other branches of trade for the same reason. Those compulsorily omitted would swell the sum total of the business of the city in 1856, greatly.

The information, so far as contained in the volume mentioned, states that that there were in Pittsburgh and Allegheny in 1856:

25 ROLLING MILLS, having—

165 heating furnaces, 262 puddling furnaces, 448 nail machines; employing 4,623 hands, whose yearly wages were \$2,866,020.00; and consuming 140,000 pig iron, scrap and blooms.

16 FOUNDRIES, having—

30 cupalos and air furnaces, with a yearly capacity of 44,300 tons; consuming 19,200 tons of pig iron; employing 860 hands, whose wages were \$346,500.

- 1 CANNON FOUNDRY, consuming—
600 tons pig metal; employing 28 hands; whose wages were \$12,040.
- 16 MACHINE SHOPS, having—
12 Foundries, with 18 cupalos, of a yearly capacity of 22,600 tons, consuming 8,800 tons of metal a year; employing 737 hands, whose wages were \$306,802.
- 7 BOILER YARDS, employing—
1049 hands, whose yearly wages were \$75,980; consuming 1470 tons of boiler and sheet iron.
- 4 SHOVEL AND AXE FACTORIES, employing—
495 hands, whose yearly wages were \$231,660; consuming 3,743 tons iron and steel.
- 2 FORGES, employing—
57 men, whose yearly wages were \$29,600; consuming 1,950 tons iron.
- 7 CHAIN FACTORIES AND RIVER BLACKSMITHS, employing—
48 hands, whose wages were \$18,100; consuming 985 tons of iron. Also
- 100 GENERAL JOBBING BLACKSMITHS, employing between 300 and 600 hands.
- 2 HOT PRESSED NUT FACTORIES, employing—
52 hands, whose wages were \$19,344; having 12 machines and 5 heating furnaces.
- 1 RAILROAD SPIKE FACTORY, having—
3 machines employing 20 hands, whose wages were \$9,360.
- 3 IRON RAILWAY SCREW AND MACHINE FACTORIES, employing—
54 men, whose yearly wages were \$15,460; consuming bar iron and other material to amount of \$38,485.
- 3 SAFE FACTORIES, employing—
65 hands, whose yearly wages were \$28,600, and consuming material to amount of \$59,700.
- 3 CUTLERY FACTORIES, employing—
29 men, whose yearly wages were \$12,080; consuming material to amount of \$5,335.
- 2 SMUT MACHINE FACTORIES, employing—
6 hands, and producing machines to amount of \$30,000.
- 1 FILE FACTORY, employing—
15 hands, whose yearly wages were \$6,240.
- 1 BOILER RIVET AND SPIKE FACTORY, having—
4 machines with a capacity of 12,000 kegs yearly; employing 10 hands, whose wages were \$6,000 yearly.
- 1 SICKLE FACTORY, producing—
3,000 doz. sickles annually.
- 2 SADDLERY HARDWARE FACTORIES, employing—
85 hands, whose wages were \$22,800 yearly; consuming \$15,402 of pig-iron, bar iron, silver and other material annually.

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- 1 RIVET MILL, employing 8 hands.
 - 1 WIRE FACTORY, employing—
15 hands, whose yearly wages were \$7,020.
 - 2 GUN BARREL FACTORIES, employing—
30 men, whose yearly wages were \$16,720; consuming material to amount of \$8,620.50.
 - 1 RIFLE AND GUN FACTORY, employing—
25 hands, whose yearly wages were \$15,600.
 - 1 REPEATING PISTOL FACTORY.
 - 2 DOMESTIC HARDWARE FACTORIES, having—
6 cupalos, with a yearly capacity of 6,500 tons of pig iron a year; consuming 2,200 tons of metal and other material to the value of \$50,700; employing 500 hands, whose yearly wages were \$15,600.
 - 3 PLOW FACTORIES, having—
4 cupalos with a capacity of 5,300 tons; consuming 1,375 tons of pig and scrap iron, and other material to amount of \$79,750; employing 120 hands, whose yearly wages were \$71,760.
 - 1 LIFE BOAT FACTORY, employing—
10 hands, whose wages were \$3,900 annually; consuming 10 tons of galvanized iron a year.
 - 1 COPPER ROLLING MILL, of which no statistics were furnished in 1856.
 - 28 COPPER AND TIN SMITHS, employing—
150 hands, whose yearly wages were \$56,000; consuming 2,877 boxes of tin, 170,000 lbs. copper, and other material to amount of \$40,000.
 - 5 COTTON MILLS, having—
33,666 spindles, 659 looms, 187 cards, using 12,600 bales of cotton, and employing 1,330 hands, whose yearly wages were \$325,000.
 - 3 WHITE LEAD WORKS, employing—
65 hands, whose yearly wages were \$38,800; consuming material, including 2,066 tons of white lead, to amount of \$392,380.
 - 34 GLASS FACTORIES, employing—
1982 hands, whose yearly wages were \$910,116, and consuming material to amount of \$2,078,734.40.
 - 1 STAINED GLASS FACTORY, employing 4 hands, whose wages were \$1,872.
 - 4 LOOKING GLASS FACTORIES, employing—
88 men, whose wages were \$36,400, and consuming material to amount of \$152,740.
 - 10 BRASS FOUNDRIES, employing—
71 hands, whose yearly wages were \$34,000; consuming material to amount of \$60,000.
 - 1 BELL FOUNDRY.

- 1 JAPAN WARE AND PRESS GOODS FACTORY, employing—
40 hands, whose yearly wages amounted to \$16,600; consuming 2,500 boxes of tin.
- 1 BRITANNIA WARE FACTORY, employing—
18 hands, whose yearly wages were \$4,680.
- 1 WIRE CLOTH FACTORY, employing 4 men, whose wages were about \$2,700.
- 3 AGRICULTURAL IMPLEMENT FACTORIES.
- 3 KEG FACTORIES, employing 180 hands, whose yearly wages were \$56,000.
- 2¹ RAILROAD CAR FACTORIES, employing 61 hands, whose wages were \$28,538.
- 1 BUCKET FACTORY, employing 30 hands, making 320,000 buckets and tubs.
- 6 COACH AND CARRIAGE FACTORIES, employing—
117 hands, whose wages were \$60,800 annually; using material to the value of \$59,800.
- 29 WAGON FACTORIES, employing—
225 hands, whose wages were \$72,480; consuming material to amount of \$71,000, and producing 2,120 wagons and carts.
- 13 TANNERIES, having—
447 vats, employing 132 hands, whose yearly wages were \$54,902; tanning 108,720 ox, calf and sheep skins.
- 27 BREWERIES, employing—
199 hands, whose wages were \$64,140; consuming 488,000 bushels of grain and 304,000 lbs. of hops.
- 6 CRACKER FACTORIES, employing—
39 hands, whose yearly wages were \$12,064; consuming 10,450 barrels of flour.
- 6 MARBLE WORKS, employing—
71 hands; consuming 450 tons of marble; whose wages were \$36,000 annually.
- 16 CABINET AND CHAIR FACTORIES, employing—
504 hands, whose yearly wages were \$96,500; consuming material to the value of \$107,792.
- 8 SOAP AND CANDLE FACTORIES, employing—
102 hands, whose yearly wages amount to \$2,920; consuming material to amount of \$36,850.
- 1 GLUE FACTORY, employing—
8 hands, whose wages were \$156,000 yearly; using material to amount of \$3,500.
- 5 LIME MANUFACTORIES, employing 50 hands, whose wages amount to \$17,200.
- 1 SLATE ROOFER, employing 15 hands, whose wages were \$7,500 annually.
- 1 STEAM WOOLEN STOCKING FACTORY, employing—
100 hands, whose wages were \$15,600: using yarn and dye stuffs to amount of \$25,500.

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- 2 MATCH FACTORIES, employing—
 - 22 hands, whose wages were \$3,482; consuming material to amount of \$1,150.
 - 1 ZINC WASHBOARD FACTORY, employing—
 - 5 hands, whose yearly wages were \$1,500; consuming material to amount of \$4,925.00.
 - 1 PORCELAIN TEETH FACTORY.
 - 1 KID GLOVE FACTORY, employing 8 hands, whose wages were \$1,250.
 - 1 ALCOHOL DISTILLERY, employing—
 - 6 men, whose annual wages were \$2,600; producing 15,000 barrels of alcohol, spirits and whisky.
 - 1 ETHEREAL OIL FACTORY, employing—
 - 3 men, whose wages were \$1,500, and produce 22,000 gallons of oil.
 - 3 LINSEED OIL FACTORIES, employing—
 - 12 men, whose wages amounted to \$4,368; consuming 32,000 bushels flax seed.
 - 2 LARD OIL FACTORIES.
 - 2 VARNISH FACTORIES, employing—
 - 6 hands, whose annual wages were \$2,496; consuming material to amount of \$38,621.
 - 17 TOBACCO MANUFACTORIES, employing—
 - 198 hands, whose yearly wages were \$61,776.
 - 2 PAPER MANUFACTORIES, employing—
 - 57 hands, whose wages were \$15,912; consuming material to amount of \$59,720.
 - 1 BOOK BINDERS BOARD FACTORY, employing 20 hands.
 - 5 FLOURING MILLS, employing 44 hands, whose annual wages were \$18,300.
 - 2 SPICE MILLS, employing 13 hands, whose wages were \$4,732.
 - 2 WHIP AND UMBRELLA FACTORIES.
 - 2 SADDLE-TREE FACTORIES, employing 5 men, whose wages were \$3,628.
 - 2 COFFEE EXTRACT FACTORIES, employing 9 men, whose wages were \$5,400.
 - 5 POTTERIES, employing 58 hands, whose yearly wages were \$21,112.
 - 3 BRUSH MANUFACTORIES, employing 32 hands, whose wages were \$7,800.
 - 2 BLACKSMITH BELLOWS FACTORIES.
 - 6 SADDLERY HARNESS FACTORIES, employing—
 - 106 hands, whose yearly wages were \$35,152.
 - 4 TRUNK FACTORIES, employing 36 hands, whose annual wages were \$11,132.
 - 2 PATENT LEATHER FACTORIES, employing—
 - 75 hands, whose annual wages were \$36,200; having a capacity of 23,000 hides a year.
 - 1 WOOLEN FACTORY, employing 8 hands; consuming 20,000 lbs. of wool.
 - 1 COMB FACTORY.
 - 1 ICE CHEST FACTORY, employing 6 hands, whose wages were \$2,496.

- 1 BOBBIN FACTORY, employing 4 hands, whose wages were \$1,056.
- 1 BROOM FACTORY, producing—
1,880 dozen brooms annually, and employing 5 hands, whose wages were about \$1,800.
- 1 CHILDREN'S CARRIAGE FACTORY, employing 8 hands.
- 2 BOX FACTORIES, employing 14 hands, whose wages were \$2,496.
- 2 PUMP BLOCK MAKERS, employing 11 men.
- 6 TURNERS, employing 41 hands, whose wages were \$17,500.
- 3 ROPE WALKS, employing 57 hands, whose wages were \$17,784.
- 3 UPHOLSTERS, employing 85 hands, whose wages were about \$20,000..
- 1 OIL CLOTH FACTORY, employing 20 hands, whose wages were \$8,000 a year.
- 17 TIMBER YARDS.
- 8 SASH AND DOOR FACTORIES, employing 80 hands, whose wages were \$33,280.
- 9 PLANING MILLS, employing 120 hands, whose wages were \$76,584.
- 7 SAW MILLS, employing 70 men, whose wages were \$26,280.
- 1 SURVEYING INSTRUMENT FACTORY, employing—
7 hands, whose wages were about \$6,000 yearly.
- 1 GOLD LEAF FACTORY, producing 600 oz. leaf yearly.
- 35 BOOT AND SHOE HOUSES, employing 90 hands, whose wages were about \$47,000.
- 9 HAT, CAP AND FUR HOUSES, employing—
56 hands, whose yearly wages were over \$20,000.
- 4 CHINA QUEENSWARE HOUSES, employing—
15 men, whose wages were about \$8,000 a year.
- 54 CLOTHING MANUFACTURERS, employing—
1,500 hands, whose earnings were over \$400,000 a year.
- 11 WHOLESALE DRUGGISTS, employing—
102 hands, whose wages amounted to \$61,200.
- 2 TRIMMING STORES, employing 17 hands, whose wages were
- 6 WHOLESALE VARIETY GOODS HOUSES, employing—
23 hands, whose wages were \$11,500 a year.
- 18 WHOLESALE CONFECTIONERIES, employing—
50 hands, whose wages were over \$17,000 a year.
- 10 BOOK AND STATIONERY STORES, employing—
29 hands, whose wages were about \$12,000.
- 14 LARGE JEWELRY HOUSES, employing—
42 hands, whose yearly wages were \$21,000.
- 2 SADDLERY HARDWARE HOUSES, employing—
11 hands, whose salaries were over \$5,000 yearly.
- 4 WALL PAPER DEALERS, employing—
13 hands, and paying wages to amount of \$5,300.
- 7 WHOLESALE LEATHER HOUSES, employing—
33 hands, whose salaries were \$16,500 yearly.

- 7 PORK PACKING HOUSES, employing—
215 hands, whose wages were about \$34,400.
- 2 WHOLESALE STRAW GOODS HOUSES, employing—
20 hands, whose salaries were nearly \$6,000.
- 32 RECTIFIERS AND LIQUOR HOUSES, employing—
109 hands, whose average wages were \$43,895.
- 9 FEED STORES, employing 27 hands, whose yearly wages were about \$11,000.
- 49 WHOLESALE GROCERY HOUSES.
- 20 PRODUCE AND COMMISSION HOUSES.
- 10 FORWARDING AND COMMISSION HOUSES.
- 4 IRON COMMISSION HOUSES.
- 4 SHIP CHANDLERS.
- 2 WOOL HOUSES.
Which last 91 houses employ 340 hands, whose salaries amount to over \$200,000.
- 3 WHOLESALE CARPET WAREHOUSES, employing—
14 hands, whose salaries were \$7,500 yearly.
- 2 AUCTION COMMISSION HOUSES.
- 2 LITHOGRAPHIC ESTABLISHMENTS.
- 11 DAILY PAPERS.
- 11 JOB PRINTING OFFICES.
- 45 WHOLESALE AND RETAIL DRY GOODS HOUSES, employing—
311 hands, and paying out about \$165,000 a year salaries.
- 15 HARDWARE HOUSES, employing—
57 hands, whose yearly wages was aggregated at \$37,500.
- 4 TRANSPORTATION HOUSES.
3 of these employ 500 men, whose wages were about \$150,000 a year, and
96 canal boats, whose value was \$83,400.

The smaller and less prominent business of the city are not, as before stated, given in the volume referred to. The population of Pittsburgh and Allegheny cities and their adjoining boroughs was, in 1856, about 138,000, and as the statistics of the retail trade of one city are the counterpart of those of another, either increased or diminished by the number of its inhabitants, the aggregate of that class of trade of Pittsburgh was, in 1856, it is to be safely assumed, the same in amount with any other city of a similar size.

The value of the business of the establishments named in the foregoing enumeration, are given as follows in the publication quoted. As they were the result of a personal canvas by the author of the volume, they are believed to be nearly correct, and represent the value at that day of the manufacturing and wholesale trade of the city:

MANUFACTURES.

Rolling Mills,	\$10,730,562	Oil Cloth Factory,	75,000
Coal,	6,336,720	Marble Works,	75,000
Lumber,	3,241,000	Upholstering,	70,000
Glass Factories,	2,631,990	Linseed Oil,	71,500
Boat Building,	1,924,800	Railroad Cars,	65,000
Cotton Mills,	1,269,655	Lard Oil,	60,000
Foundries,	1,248,300	Coffee Extract,	60,000
Soap and Candles,	960,000	Japan Ware,	60,000
Flour Mills,	864,500	Turners,	55,000
Breweries,	864,000	Woolen Stockings,	50,000
Axes and Shovels,	823,742	Boiler Rivets,	50,000
Machine Shops,	836,300	Iron Railings,	52,000
Furniture,	503,000	Lime,	48,000
Tanneries,	463,320	Varnish,	46,500
Domestic Hardware,	450,000	Saddlery Hardware,	44,000
Distillery,	450,000	Cannon,	40,000
Tobacco Factories,	443,770	Smut Machines,	40,000
White Lead Factories,	443,390	Wire Factory,	40,000
Boiler Yards,	305,000	Gun and Rifle Factory,	40,000
Steamboat and River Black-		Brush Factory,	40,000
smiths,	261,000	Whip Factories,	34,000
Railroad Spikes,	250,000	Potteries,	33,000
Copper Rolling Mill,		Sickle Factories,	30,000
Forges,	224,500	Cutlers,	30,000
Nail Factories,	229,700	Trunk Factories,	30,000
Wagon Factories,	204,500	Gun Barrels,	28,875
Plow Factories,	192,000	Gilt Moulding,	25,000
Copper and Tin Smiths,	192,000	Spice Factory,	25,000
Saddlery and Harness,	181,000	Rivet Factory,	20,000
Carriage Factories,	175,000	Britannia Ware,	18,000
Looking Glass Factories,	170,000	Ethereal Oil,	20,000
Keg Factories,	156,000	Box Factories,	12,480
Salt,	130,000	Files,	12,000
Rope Walks,	117,451	Brooms,	11,000
Safe Factories,	116,000	Pumps and Blocks,	10,000
Cracker Factories,	114,000	Matches,	10,752
Paper,	86,000	Blacksmith Bellows,	10,000
Bucket Factories,	85,000	Life Boats,	10,000
Patent Leather,	80,000	Survey Instruments,	10,000
Agricultural Implements,	80,000	Stained Glass,	10,000
Brass Foundries,	75,000	Wire Cloth,	10,000

Glue Factory,	7,500	Woolen Factories,	5,000
Washboard Factory,	6,750	Saddle Trees,	5,000
Children's Carriage Factory	6,000	Bobbins,	2,500
Kid Gloves,	6,650	Combs,	1,000

The total of these figures are \$39,431,717 of manufactures, so far as this list extends.

The same volume gives, as the sales of the wholesale trade:

Groceries,	\$5,812,000	Hats, Caps and Furs,	250,000
Produce,	3,244,000	Leather,	252,000
Pig Iron,	3,255,150	Books and Stationery,	225,000
Dry Goods,	2,843,230	Tin and Metals,	216,000
Clothing,	960,000	Feed,	214,000
Boots and Shoes,	806,000	Saddlery Hardware,	130,000
Drugs,	725,000	Carpets,	125,000
Rectifiers and Liquors,	731,890	Trimmings,	111,000
Pork Packers,	645,000	Straw Goods,	108,000
Hardware,	615,000	Paper and Rags,	80,000
Jewelry and Watches,	375,000	China and Queensware,	75,000
Variety Goods,	284,000	Wall Paper,	56,000
Manufacturing Confectioners,	279,000	Bonnet Factories,	36,000
Soda,	270,000		

These figures give an aggregate of the wholesale trade in the branches given at \$22,723,370. As the volume from whence the figures are quoted, regrets inability to obtain figures of some branches of manufactures, and there are other business not mentioned, which are properly to be classed with the manufactures of the city, it is probable that the manufactures and wholesale business of the city in 1856 was about seventy million of dollars. In 1837 the manufactures of the city was summed up at \$11,606,350, and the coal trade at 565,200, or \$12,175,550. In 1856, twenty years after, it is clearly \$39,431,717 from actual figures given, an increase of over 300 per cent. in that time, although it was probably more for the reason given. The whole mercantile and commercial business in 1837 is given at \$18,975,000, and that includes the retail trade. In 1857 the wholesale trade alone is, without the commission business, other than pig metal, \$22,723,370. What per cent. of increase that may be, cannot be shown as in the figures of 1837, are included the retail trade of the city, while in those of 1856, the retail trade is omitted, and all of the commission business, with the exception of pig iron.

CHAPTER VI.

GROWTH OF POPULATION AT PITTSBURGH.

Frugality and industry are prominent characteristics of the inhabitants of Pittsburgh; consequently a large amount of conservatism is observable in all their transactions.

The industry of its population is not surpassed by that of any other city; and there is, for all the wealth of its population, fewer gentlemen of leisure than in any city of the Union.

There are at the present time but few families in which the male members are not engaged in some occupation from day to day, of either a professional, mercantile or mechanical character; and there could not be pointed out half a dozen men of wealth who, themselves or their sons, lead the life of leisure which is usually led by persons equally wealthy, in other cities of the Union.

In the wealth of their population, Pittsburgh and Allegheny would probably compare unfavorably with the large eastern cities as to the number of persons usually termed millionaires, implying the possession of \$500,000 or over. Yet, in point of persons who may be considered independent, and those possessing handsome fortunes and competencies, there is in all possibility no other city, for the same population, can compare favorably with Pittsburgh.

The wealth of the city is generally distributed—a result of the frugality and industry before mentioned, as well as of the opportunities here, for the accumulation of money.

The population of Pittsburgh, including Allegheny, is at the present time over 200,000, even leaving out precincts which might be truthfully classified in the city. There are many towns whose growth seems to have been more rapid than Pittsburgh, and probably for a short period has been so; yet, viewing the increase of Pittsburgh for a series of years, we find there has been, in the swell of population, a progress which has attracted but little attention, and is in its comparative ratio with the growth of other points, undervalued by even her own citizens.

That progress is best shown by progressional ratios. In 1800 the population of the portion of the western country to whose borders Pittsburgh has navigation, as shown in the chapter on the geographical position of the city, was 385,647, while that of the city itself was 1,565, or a little over four-tenths of one per cent. In 1810 there were in the same territory 1,075,531 inhabitants, and in Pittsburgh 4,768, or nine-twentieths of one per cent. In 1820 the population of

the same section of the country was 2,541,552, and that of Pittsburgh 7,248, or not quite three-tenths of one per cent. In 1830 the same section of the Union had 3,331,298 inhabitants, and Pittsburgh 16,988, being over five-tenths of one per cent. of all. In 1840 there were 5,173,949 inhabitants in the western and southwestern States, while the population of Pittsburgh was 38,931, being fifteen-twentieths of one per cent. In 1850 the population of the section of the Union just mentioned, was 8,419,179, and that of Pittsburgh 79,873, being nineteen-twentieths of one per cent. In 1860 the population of the western and southwestern States was 11,489,318, and that of Pittsburgh and Allegheny cities, and their adjoining boroughs, whose population is really part of that of the two cities, was 124,844, being nearly one and one-tenth per cent. In 1870 there was in the section of the Union under comparison, 14,583,567 inhabitants, while in the community of Pittsburgh and Allegheny there was a population of 199,130, being one and nearly four-tenths per cent. Considering the location of Pittsburgh as a natural centre, as shown in the chapter on the cities' geographical position, to the population of this great mass of the Union, it would be far from unsatisfactory, as showing her prosperity, if her population had increased in arithmetical proportions with that territory of which she is the centre; and yet more satisfactory if that increase of population was in corresponding ratios with that of the western and southern States, to which she has, in past years, looked for her markets, and to which she has access by her river transportation facilities. A brief comparison will exhibit Pittsburgh's vitality in this respect, and present in the most comprehensive and satisfactory form her growth.

In 1800, as previously stated, the population of Pittsburgh was four-tenths of one per cent. of that of the West and South.

To exhibit a steady growth with the population of the South and West, the ratio of four-tenths of one per cent. of that population is all that would be required to be maintained. In 1810 the population of the city was 4,786, or nine-twentieths of one per cent.; the ratio of four-tenths of one per cent. being only 4,300. In 1820 the population of the city was 7,248, being not quite three-tenths of one per cent.; the ratio of four-tenths requiring 10,164 inhabitants. At this period the business of the city was in a ruined condition in consequence of the reaction in the prices and activities of the war of 1812, under which Pittsburgh had been very prosperous. In 1830 the maintaining of the ratio of four-tenths of one per cent. would require that Pittsburgh should have 13,324 inhabitants; it had at that date 16,988, or over five-tenths of one per cent. In 1840 the ratio of 1800 required a population of 20,692; there was 38,931, or fifteen-twentieths of one per cent. In 1850 the population of Pittsburgh was equal to nineteen-twentieths of one per cent. of that of the West and South, or 79,873, while the maintainance of the ratio of four-tenths would demand but 33,676. In 1860 the ratio of four-tenths of one per cent. required a population of 45,956, and there was 124,844, or one and nearly one-tenth per cent. In 1870, the community of Pittsburgh and Allegheny numbered 199,130, being one and

nearly four-tenths per cent. of the population of the West and South; the ratio of 1800 only requiring 58,322 inhabitants, that being four-tenths of one per cent. of the then population of the southern and western States.

Although the early growth of Pittsburgh was retarded by the cloud over the Penn title and the foreign tenure of Louisiana, yet from these figures it is apparent that Pittsburgh has not only increased in population in the same proportion that her market has, but has largely compounded on those ratios.

From 1817 to 1825 the city was at a stand still, from effects produced by the termination of the war of 1812. In 1817 many factories stopped, and until 1821 there was a continual downward tendency in all business and property. In 1821 the distress appeared to have reached its height; manufactories, trade and industry were all prostrated. In May of that year the price of flour was one dollar per barrel; boards were two dollars a thousand feet; whisky, fifteen cents a gallon; sheep and calves, one dollar per head. It required a bushel and a half of wheat to buy a pound of coffee, and twelve barrels of flour to purchase a yard of superfine broadcloth.

In 1825 and 1826 the city began to rally, and in 1830 she was again prospering. In 1837 she was with other cities retarded by the subsidence of the land speculation fever, and the panic. It will, however, be observed that notwithstanding these adverse years, that from 1820 to 1830 there was an increase equal to 135 per cent., or $13\frac{1}{2}$ per cent. a year; and that from 1830 to 1840 an increase of 129 per cent., or nearly 13 per cent. a year.

From 1840 to 1850 the increase was equal to 105 per cent.; or $10\frac{1}{2}$ per cent. a year. This increase was relatively more rapid than its percentage indicates, as twice the number of population was doubled in that decade to that which had been in the previous one. From 1850 to 1860 the increase was equal to only a little over 61 per cent., or 6 1-10 per cent. a year, although the actual increase in number of population was five thousand over that of the previous decade. The heavy population to be doubled upon producing a lessened percentage of increase, although the actual gain was, in whole numbers, greater. From 1860 to 1870 the increase was equal to not quite sixty per cent., or a little less than six per cent. a year, although the actual numbers added to the population was sixty-five per cent. greater than in the decade from 1850 to 1860. This diminution of the percentage of the increase upon the whole number of the community in each decade, results not from diminished increase in numbers—yearly added—but from the greater magnitudes of the sum total of the cities' population, on which the percentages are computed, and could not be otherwise, unless under some unusual aggregation of fresh population. While, as in the last decade, the actual numbers added show so large a per cent. of gain over the numbers increased in the previous decade, it is apparent there is a rapid growth even under diminished percentages on the previous population totals. The monetary troubles of 1857, and the depressions of 1860–61, naturally checked the growth of the city, but as the results in 1870 show the effects were only temporary.

Statistics are almost prophetic in their relations to the future, and a study of them gives confidence in the deductions from their showings. Where the statistics of any given thing show the original ratios of increase to have been sustained and verified from decade to decade, there is good reason to have confidence that where the same powers that have caused that increase still are operative, that what has been verified in the past will be continued in the future.

The steady increase of the population of Pittsburgh during a period of seven decades, through the disasters of the peace of 1815, the bankruptcies of 1837, the great fire of 1845, the monetary troubles of 1842, the local panic of 1854, the national panic of 1857, and the depressions of 1860-61, from the outbreak of the rebellion, indicate clearly that, although each decade depressing periods of business and stagnations of commerce similar to that of 1873-4-5, have occurred, yet the city, as a whole, has continued to increase its population, and consequently its business, however individuals may have, in the wreck and crash of private fortunes and individual interests, sunk and been forgotten.

Though the panic of 1873, and the prolonged business uncertainties of the past three years, have had their effect on the city's growth, it will be found in the future, as it has been in the past, that in a decade of years the ratios of growth will show no material disturbance.

Pittsburgh's geographical position is unchanged; her railway system as comprehensive as ever; her power of manufacturing as great, and is on the eve of obtaining yet greater force. Her position at the head of a grand system of inland navigation will receive new strength and importance during the present decade, in that permanent improvement of the navigation of the Ohio which is now on the eve of being begun. With the markets of the world opening to the manufactured products of the United States, under their ability, by their power to manufacture cheaply, to compete with and in European and Asiatic nations, Pittsburgh will grasp her share of this new volume of trade. In the obtaining of it, in addition to that of her old markets of the South and West, and to which she is in steel and iron, glass and other staples, rapidly adding that of the East, population will continue as heretofore to go hand in hand with her increasing production and sales. Where the statistics of the past so forcibly, through a period of seventy years, show the aggregate of population, it is reasonable to believe that the statistics of the population of Pittsburgh in the eighth decade will repeat what they have shown in the past seven. Why should they not, when all and more of the power that has attracted population in the past still exists? Under the ratios of the past it is not presumptuous to believe that, in 1880, four years from now, the census will show Pittsburgh and Allegheny to have 240,000 inhabitants, and over 300,000 in 1890. From 1850 to 1860, in which occurred two periods of depression of business, over 44,000 inhabitants were added to the population of the city. If from 1870 to 1880 only the same number should be added to what the census of 1870, six years since, showed, a population of over

240,000 will be reached. From 1860 to 1870 over 74,000 people were added to the population. From 1880 to 1890, so far as human intelligence can see, promises to be a prosperous decade for the United States. The effects of the panic of 1873 are slowly wearing away. The finances of the nation are gradually adjusting on a fresh basis, remote from the inflations of the past. Capital is abundant, and with the returning confidence, will become active from its own inherent necessity to be employed to preserve itself from decrease in its holders' hands. The manufactures of the United States are reaching beyond their own home markets for sale of their products, and with success; and the horoscope of the decade of 1880-90, indicates enterprise, activity and development,—as full of progressive results to Pittsburgh, as the the period from 1863 to 1873. Within that period, as before stated, 74,000 people were added to the cities' population. If only the same number are added from 1880 to 1890, when there is every probability that the conditions incident to growth will be as great, and greater, than in 1860 to 1870, a population much over 300,000 will be attained. Taking therefore the actual ratios of increase of population for seventy years, as shown from the census during that space of time, and also the actual numbers of inhabitants gained in the two decades from 1850 to 1860 and from 1860 to 1870, and there seems no improbability that in 1880, as previously asserted, Pittsburgh will have a population of over 240,000 people, and more than 300,000 in 1890. In this increase of population, and the consequent business that will have attracted them, and increased by their presence, as well as have been increased by their enterprise, are there not possibilities for capital, merchants, skilled mechanics, industrious workmen, holders of real estate, worth thinking of?

CHAPTER VII.

CLIMATE AND HEALTH OF PITTSBURGH.

The climate of Pittsburgh has, no doubt, much to do with the healthfulness of the city, and its healthfulness much to do with its success as a manufacturing and commercial city. A healthful location is one of the primary conditions of a successful manufacturing community. Why, it is hardly necessary to discuss. It is apparent that strength, cheerfulness, and ability to perform unbroken labor are three of the conditions most requisite to render fully available the skill of the mechanic, or the sinews of the workman. The position of Pittsburgh is peculiarly a healthy one, situated seven hundred and fifty feet above the level of the ocean; nearly three hundred miles from its tide marshes; one hundred and eighty feet above the level of Lake Erie, and more than one hundred miles from its coast, the city is far enough removed from causes of disease originating in the marshes of the coasts of such large bodies of water, and near enough to feel the beneficial effects of their moisture upon the atmosphere, without the injuriousness of the greater dampness in fogs and chilliness of a nearer location. Although nearly surrounded by hills more than four hundred feet in height, the valleys of the Allegheny and Ohio are open to free ventilation by the north-east and north-west winds. The summer winds from the South which visit other western cities, from low and paludal grounds, here descend upon the town from a terrace of four hundred and fifty feet, after passing for a long distance over a well-drained, cultivated, broken and mountainous region, while the winds from the East and the South-East come sweeping down from the salubrious elevations of the Alleghenies filled with the purity of their atmosphere.

The greatest heats usually occur in July, and the extreme cold in January. The winter does not generally set in with severity until the latter part of December; and in the average of seasons, the moderate temperatures of spring begin about the middle of February. Vegetation comes rapidly forward in the latter portion of March and April; but there is almost invariably frost during the first ten days of May; fires are not generally dispensed with, however, until the first of June. The autumn is a delicious season in this vicinity. From the first of September, when usually the nights and mornings become slightly cool, until the last of November, a period of delightful weather prevails, with a clear serene atmosphere—which acquires that peculiar hazy appearance, in October, usual to that pleasant season known as Indian summer. During the winter months the wind is generally from the north-west, and during rain storms and

damp weather, from the north-east. In summer months the pleasant south-western winds prevail—changing to south-easterly currents during rains.

The mean temperatures of each quarter, as shown by observations carefully made, are given in the following table:

	1856.	1873.	1874.
Winter quarter, . . .	21° above zero.	31° above zero.	36.43° above zero.
Spring “ . . .	46° “	60° “	59.7° “
Summer “ . . .	71° “	69.6° “	70.9° “
Autumn “ . . .	51° “	43.4° “	42.8° “

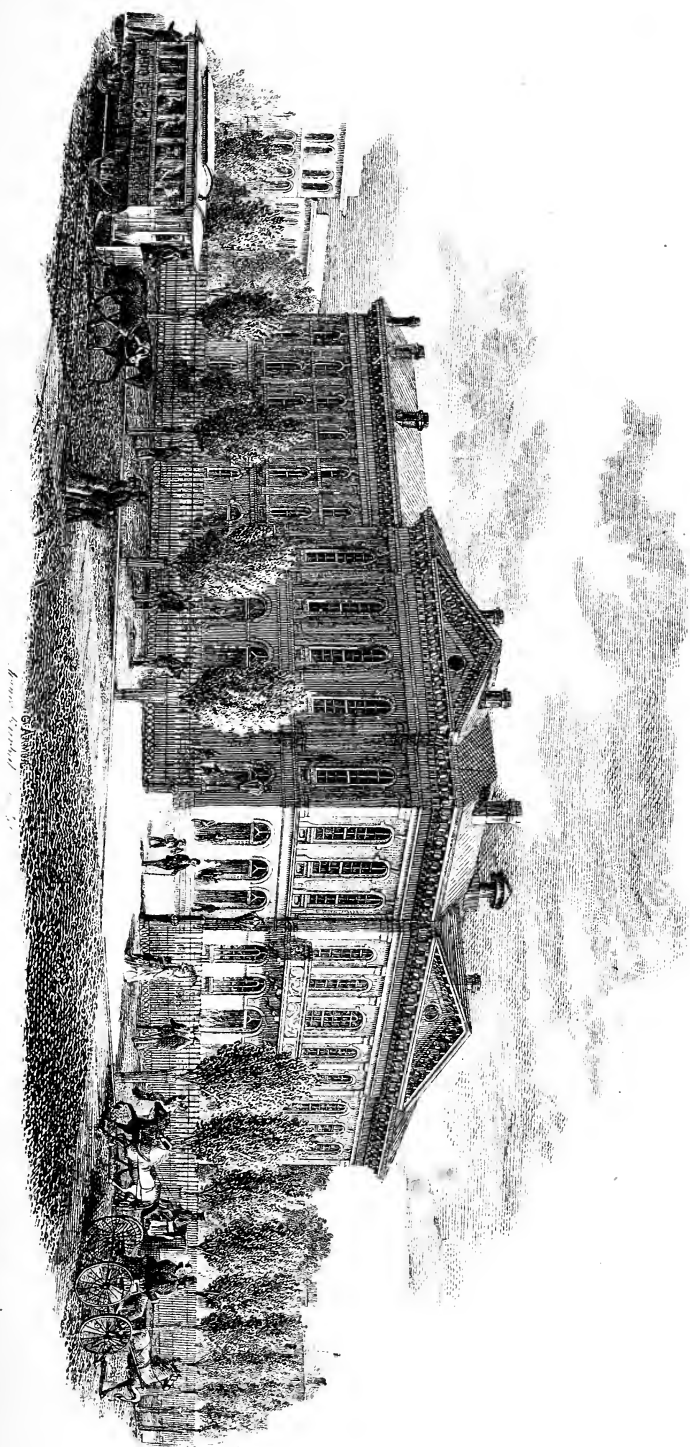
The subjoined table presents the mean temperatures, Fahr., of each month for the two years of 1873–1874, as recorded by the United States Signal Officer:

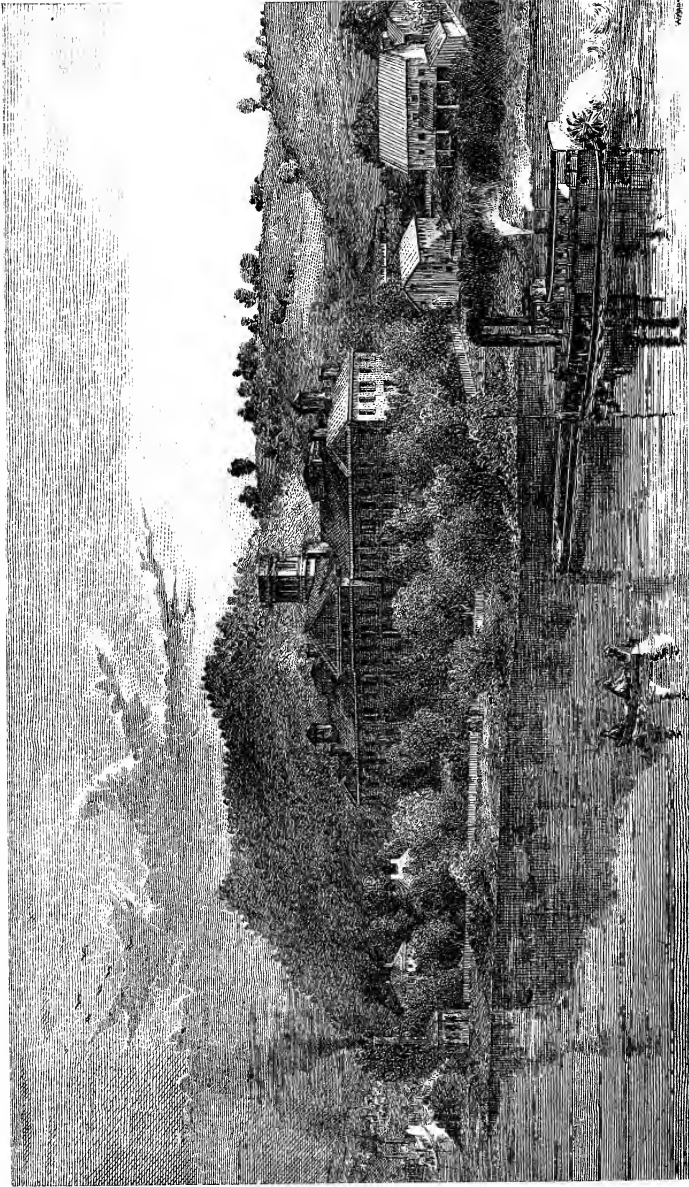
1873.		1874.	
ab. zero.	ab. zero.	ab. zero.	ab. zero.
January, . . . 29°	July, . . . 74°	January, . . . 35.5°	July, . . . 74.7°
February, . . . 29°	August, . . . 71.9°	February, . . . 34.5°	August, . . . 70.4°
March, . . . 36°	September, . . . 63.6°	March . . . 39.3°	September, . . . 67.6°
April, . . . 48°	October, . . . 57.3°	April, . . . 43.3°	October, . . . 52.5°
May, . . . 31°	November, . . . 35.8°	May, . . . 61.9°	November, . . . 40.9°
June, . . . 72°	December, . . . 37.1°	June, . . . 73.9°	December, . . . 35.2°

If it were not for the coal smoke, which is to strangers more objectionable than natives, there is not a pleasanter location in the United States. The scenery, which along the three rivers is highly romantic and picturesque in its character, is diversified by plain, mountain and valley; and a walk of fifteen minutes from the business centre of the city will bring the pedestrian out upon high table ground from two to three hundred feet above the level of the business portion of the city and clear of its smoke, while, as stated in the chapter in which Pen Pictures of Pittsburgh are given, there are sections of the city altogether as free from the annoyance of smoke as any city in the Union. This smoke, however, according to the report of Dr. Meyers, formerly physician to the Marine Hospital in this city, is from the carbon, sulphur and iodine contained in it, highly favorable to lung and cutaneous diseases. The smoke is also *anti-miasmatic*, hence the few cases of remittent and intermittent fever.

Dr. Wm. H. Denny says: “Strangers with weak lungs for a while find their lungs aggravated by the smoke; but, nevertheless, asthmatic patients have found relief in breathing it. In this account, coal is our creditor; in another way its abundance, cheapness and consequent general and profuse use by the poorest inhabitants, is undoubtedly the cause of our superior healthfulness. The low fevers so prevalent in the large cities among the poor during a hard winter, and the ague and fever so common in the eastern countries where wood is scarce, are here in a measure prevented by the universal practice of keeping good coal fires late in the spring and early in the autumn, and indeed at all seasons when the weather is damp or inclement.”

CITY HALL, ALLEGHENY CITY.





CITY POOR FARM.

Says the same authority we have just quoted: "Of all the great western towns, Pittsburgh is the farthest removed from the baneful exhalations of the swampy borders of the Mississippi, and accordingly enjoys a greater exemption from those diseases which, during the summer and autumn months, prevail even as high as Cincinnati. * * * Dropsies, dysenteries, diarrhœas and cholera diseases which are influenced by causes of a malarious origin, have never prevailed to any extent. * * * In comparison with eastern cities, there is much less pulmonary consumption, less scrofula, and less disease of the skin. There is scarcely any fever and ague, and no yellow fever. In comparison with western cities, including Cincinnati, there is less bilious fever, less fever and ague, less cholera infantum, and far less malignant cholera. We are the intermediate link of disease as well as of commerce. We have less hepatic disease than the West, and less pulmonic disease than the East."

Upon this point of pulmonic diseases, the statement of Dr. Meyers and of Dr. Denny as to the effects of the smoke, is supported by the following statement of Dr. Snively, physician of the Pittsburgh Board of Health, who, in his report for 1873, says: "Statistics for 1873 prove that, with the exception of St. Louis and Cleveland, the death rate from consumption is decidedly lower in Pittsburgh than in other cities of a large size. * * * * Pittsburgh with its smoky atmosphere, combined with a variety of supposed impurities, justly ranks in this particular as one of the most salubrious cities of the United States."

The following table exhibits the percentage of deaths from this disease to the total mortality, and the annual death rate therefrom, in comparison with eight cities:

City.	Population.	Yearly deaths.	From consumption	Per cent. on total mortality.	Annual per cent. per 1,000 consumption.
Pittsburgh,	133,000*	3,519	326	9.26	2.45
New York,	1,000,000	29,084	4,134	14.22	4.13
Philadelphia,	750,000	16,776	2,290	13.65	3.05
Brooklyn.	435,000	10,968	1,376	12.55	3.16
New Orleans.	200,000	7,505	639	11.33	4.25
Cincinnati,	246,938	5,641	657	11.64	2.66
Boston,	275,000	7,869	1,089	13.84	3.96
Baltimore,	302,000	7,588	1,108	14.60	3.67
San Francisco,	188,000	3,641	514	14.12	2.74

This table is given rather to substantiate the statements of the physicians quoted, and to show that the smoky atmosphere of Pittsburgh is, even in a disease where it might be naturally supposed to be injurious, not prejudicial to health, than to give the impression that the city is a desirable retreat for persons whose lungs are affected. There is no doubt Pittsburgh is a remarkably healthy city, and no part of the United States is better suited to European constitution.

*Only Pittsburgh city proper.

CHAPTER VIII.

BOAT BUILDING OF PITTSBURGH.

In February, 1756, one John McKinney who was taken prisoner by the Indians and imprisoned in Fort Duquesne, after being carried to Canada, from whence he made his escape to Philadelphia, gives the following incident in his description of the Fort. "While he was at Fort Duquesne, there came up the Ohio from the Mississippi, about thirty batteaux, and about one hundred and fifty men, loadened with pork, flour, brandy, peas, and Indian corn; they were three months in coming to Fort Duquesne, and came all the way up the falls without unloading."

This is the first account, one hundred and twenty years ago, of the carrying trade to Pittsburgh.

A diary kept by one James Kenny, who was a trader at Fort Pitt in 1761, three years after it was built on the ruins of Fort Duquesne, and one hundred and five years ago, gives the following, which we copy from the *Historical Magazine* for September, 1858:

"1761, 4th mo: 4th.—A young man called Wm. Ramsey, has made two little boats, being squair at ye sterns, and joined together at ye sterns by a swivel, make ye two in form of one boate, but will turn round shorter than a boat of ye same length, or raise with more safety in falls and in case of striking rocks; he has also made an engine that goes with wheels enclosed in a box, to be worked by one man, by sitting on ye end of ye box, and tredding on treddles at bottom with his feet, sets ye wheels agoing, which work scullers or short paddles fixed over ye gunnels turning them round; ye under ones always laying hold in ye water, will make ye boate goe as if two men rowed; and he can steer at ye same time by lines like plow lines."

This is, perhaps, one of those first germs of the steamboat that suggest the familiar quotation, "coming events cast their shadows before them;" and render it a subject of so much controversy as to when and by whom the first initial idea of a steamboat was conceived.

This was twenty-five years before either James Ramsey, of Berkley county, Virginia, succeeded in propelling his "*flying boat*," as it was called by the people, against the current of the Potomac at Shepherdstown, by steam alone, at the rate of four or five miles an hour; and also twenty years before Fitch, in 1780, accidentally meeting Ramsey in Winchester, imparted to him his idea of propelling boats by steam.*

* This statement as to Ramsey obtaining his idea from Fitch, is on authority of Hon. Robert Wickliffe, vol. 1, page 36, *American Pioneer*.

We know, nor hear, nothing more of the young man Wm. Ramsey, with his two little boats "joined together at ye sterns;" and he rests another of those whose minds illuminated by the first spark of an invention brought to practical use by others in after years, either from want of means, actual ability to work out their crude idea into full conception, or want of appreciation of the value of their own thought, progress no further than the first rude attempt to give shape to their thought. The thought naturally occurs here that if the young man had persevered with his idea, Pittsburgh was near, perhaps, to being the scene of the first attempts in America to construct steamboats. Ramsey's first idea being to propel boats with poles moved by machinery.

The city was, however, the location of the first full practical effort at steamboat construction, in the building at Pittsburgh of the "New Orleans," by Messrs. Fulton, Livingston & Rosewalt in 1811; four years after Fulton made his first convincing experiment, in 1807, of propelling a boat at the desired velocity by steam.

The steamboat having had so important a place in the growth of the business of Pittsburgh, and the developments of the West; a limited space may be properly spared, and a digression allowed from the real topic of this chapter to briefly present some facts as to the invention of steamboats.

From a work published about forty years since in Spain, of original papers relating to the voyage of Columbus, preserved in the royal archives at Samancas, and those of the Secretary of War of Spain, in 1543, it is stated, "that Blasco de Garay, a sea captain, exhibited to Charles V, in the year 1543, an engine by which vessels of the largest size could be propelled, even in a calm, without oars or sails. The Emperor decided that an experiment should be made, which was successfully attempted on June 17, 1543, in the harbor of Barcelona. The experiment was on a ship of 209 tons, called the "Trinity." Garay never publicly exposed the construction of his engine, but it was observed at the time of his experiment, that it consisted of a large cauldron of boiling water, and a movable wheel attached to each side of the ship." The statement says further: "The Emperor and Prince, and others with them, applauded the engine, and especially the expertness with which the ship could be tacked. The Treasurer Ravago, an enemy to the project, said, 'it would move two leagues in three hours;' it was very complicated and expensive, and exposed to the constant danger of bursting the boiler."

It is claimed that this account is fictitious, the offspring of some individual jealous for his country's reputation, as the date is fifty-four years before the birth of the Marquis of Worcester, who is given by history the credit of being the original inventor of the steam engine. From this statement it would appear that DeGaray not only originated the steam engine, but made at the same time its application in one of its most practical and beneficial forms, and at a single effort accomplished what took the light and talent of several generations to invent and bring to practical shape.

A treatise was printed in London in 1737, describing a machine invented by Jonathan Hulls, for carrying vessels against wind and tide, for which George II granted a patent for fourteen years. A drawing is prefixed to the treatise showing a boat with chimney smoking, a pair of wheels rigged over each side of the stern. From the stern of the boat a tow-line passes to the foremast of a two decker, which the boat thus tows. This is evidently the first idea of a steam tow boat.

The experiment of James Ramsey, before mentioned, is the next in order of which there is reliable record. In October, 1874, he obtained from the Legislature of Virginia, an act guaranteeing him the exclusive use of his invention in navigating the waters of that State for ten years. Ramsey's boat was fifty feet in length, and was propelled by a pump which forced a quantity of water up through the keel and out through the stern, through a pipe a few inches square. The impetus of this water acting against the exterior water producing the propelling power. The boiler held only five gallons of water, and needed only a pint at a time.* Ramsey had another project, which was to apply the power of a steam engine to long poles, which were to reach to the bottom of the river, and so push a boat. Ramsey, after the experiment before alluded to, went to England, and through many discouragements, struggled on until he had constructed a boat of one hundred tons, and pushed his machinery so near to completion, as to be able to indicate a day for a public exhibition. Death, however, put an end to his career in Liverpool, and under touching circumstances. He had consented to give a lecture in exposition of his plan, so as to enlist patronage from the public. When the evening came the hall was filled with the learning, fashion and beauty of Liverpool. He was overwhelmed with this evidence of interest, and saw his most ardent hopes on the eve of accomplishment. He arose to begin his lecture in great agitation. A glass of water was handed him; he returned his thanks in a few incoherent sentences, sank into his chair, and never spoke again. The boat he had nearly completed was set in motion after his death, on the Thames, in 1793. It is proper to quote here a fitting tribute paid to his memory by the Congress of the United States on February 9, 1839, when it was unanimously

"Resolved, That the President be, and he is hereby required to present to James Ramsey, Jr., the son and only surviving child of James Ramsey, deceased, a suitable gold medal commemorative of his father's services and high agency in giving the world the benefit of the steamboat."

In 1780 the Marquis de Jouffrey worked a steamboat 140 feet long on the Seine.

In 1785 both Ramsey and Fitch had exhibited models to Gen'l Washington, and on March 15, 1785, Washington, in a letter to Hugh Williamson, certifies that his doubts are satisfied, after witnessing Ramsey's experiment before men-

* Stuart's Anecdotes of Steam Engines.—[English Publication.]

tioned. As previously stated, it is claimed that Ramsey got his idea from John Fitch, who made many efforts to have his invention tried. He applied to Congress and was refused, just as was nearly the fate of Morse with his telegraph. He offered his invention to the Spanish government, for the purpose of navigating the Mississippi, without better success; but at length obtained the funds for the building of a boat, and in 1788 his vessel was launched on the Delaware. Fitch used oars worked in frames. After many experiments, Fitch abandoned his invention, having satisfied himself of its practicability, being embarrassed with debt. In his autobiography he says, "I know nothing so perplexing and vexatious to a man of feeling as a turbulent wife and steamboat building. I experienced the former, and quit in season; and had I been in my right senses I should undoubtedly have treated the latter in the same manner. But for one man to be teased with both he must be looked upon as the most unfortunate man of this world"

He died in 1799, at Bardstown, Kentucky, and was buried near the Ohio. Previous to leaving the East, he wrote three volumes, which he deposited in manuscript, sealed up, in the Philadelphia Library, to be opened thirty years after his death. These volumes were opened in 1833, and in them he confidently predicts the success of his plan. He prophesies that in less than a century, the western rivers will be swarming with steamboats, and expresses a desire to be buried on the banks of the Ohio, "where the music of the steam engine may soothe his spirit, and the song of the boatmen enliven the stillness of his resting place."

How full of disappointed hope is this sentence from his journal, "The day will come when some more powerful man will get fame and riches from my invention! but nobody will believe that *poor John Fitch* can do anything worthy of attention."

In 1787, after Fitch's experiment, a Mr. Symington succeeded in propelling a steamboat on the Clyde in Scotland. In 1797 John Stevens, of Hoboken, began his experiments and succeeded in propelling boats at the rate of five or six miles an hour. In 1797 Chancellor Livingston built a boat on the Hudson, and applied to the Legislature for the exclusive privilege. This was granted on condition that he should propel a vessel by steam, within a year, three miles an hour; but Livingston, unable to comply with this condition, dropped his project for a time. He afterwards associated himself with Stevens, and aided by Nicholas Roosevelt, carried on the experiments until he (Livingston) was sent to France as Minister. Mr. Stevens continued his experiments for several years, when Mr. Livingston having attained a renewal of the exclusive grant from the State of New York, he, with the assistance of his son, applied himself with greater attention to the project, and in 1807, only a few days after Fulton's convincing experiment succeeded in propelling a steamboat at the required velocity of three miles an hour. Fulton, it is said, had in 1803 made a successful trial on the Seine with a boat that moved at the rate of four miles an hour.

About 1802-3, Oliver Evans of Philadelphia, built on the Mississippi a boat to ply between New Orleans and Natchez. When the boat was ready it was left high and dry by the falling water, and the engine was placed temporarily in a saw mill. The mill was burned by some incendiaries; whom it was likely to deprive of a profitable job of sawing lumber, and thus an attempt to establish steamboats on the Mississippi was defeated some four years before Fulton's experiment.

All these efforts seem to have been preliminary experiments; to Fulton really belongs the credit of bringing to practical results the steamboat, in the construction in 1810-11, by himself, Livingston and Rosewalt, of the "New Orleans" at Pittsburgh.

But to return to the date of 1756, at which we have in the opening sentence of this chapter mentioned Pittsburgh's earliest connection with the carrying trade of the western rivers.

From the date of 1756, up to 1776, there is nothing necessary to record, showing progress in the carrying trade of the western rivers, as connected with Pittsburgh.

In 1776 Messrs. Gibson and Linn, the grand-father of Dr. Linn, formerly a senator in Congress from Missouri, descended by water from Pittsburgh to New Orleans, to procure military stores for the troops stationed at the former place. They completely succeeded in their hazardous enterprise, and brought back a cargo of 136 kegs of gun powder. On reaching the falls of the Ohio on their return, in the Spring of 1777, they were obliged to unload their boats, and carry the cargo round the rapids, each of their men carrying three kegs at a time on his back. The powder was delivered at Wheeling, and afterwards transported to Fort Pitt.

The 23d of February, 1777, is worthy of mention, as the date at which, it may fairly be said, commenced that important branch of the business of Pittsburgh—boat building. On that day "fourteen carpenters and sawyers arrived at Fort Pitt from Philadelphia, and were set at work on the Monongahela, fourteen miles above the fort, near a saw mill. They built 30 large batteaux, forty feet long, nine feet wide, and thirty-two inches deep, which were intended to transport troops."

The contrast between the era of keel boats one hundred years ago, when, in 1776, Messrs. Gibson and Linn brought their cargo of gunpowder from New Orleans, and that of the steamboat of to-day, is extreme.

Could the ashes of one of those hardy boatmen, which mingle with the dust on the margin of the western rivers, become again a living man, the transition between now and then would be to him accountable only by magic.

One hundred years ago, while the sturdy crew were propelling their boat to its destination, the community they left, and that to which they were proceeding, might have been destroyed, and the tenants of the solitary boat, struggling up the currents of the river, remain ignorant of the event until they arrived at the end of their route. Now the traveler upon the western waters may daily, and

frequently more often, while the steamer is tarrying at way side ports, converse with friends three thousand miles away, and learn the successes or misfortunes fellow men; not only in the wide territory through which run the waters of his over which he is traveling, but in the far off nations of the earth.

The position that Pittsburgh occupies as the point where was constructed, and whence departed the first steamboat that navigated the western waters, gives her an historical prominence in connection with the invention of steam-boats, and has enabled her to attain and preserve an equal prominence in the boat building business of the West.

From 1776, for a period of twenty years, the commerce of the Ohio and the Mississippi was carried on in keel-boats and flat-boats. In July of the year 1794, on the 22d of April of which year Pittsburgh was incorporated as a borough, a line of mail boats was established to run from Wheeling to Limetown, and back, once in every two weeks, the mails being carried from Wheeling to Pittsburgh, and back, on horseback. These boats "were twenty-four feet long, built like a whale-boat, and steered with a rudder. They were manned by a steersman and four oarsmen to each boat. The men had each a musket and a supply of ammunition, all of which were snugly secured from the weather in boxes alongside their seats."

The same year there was started a line of boats from Cincinnati and Pittsburgh, in relation to which we quote from an advertisement in "The Centinel of the Northwestern Territory," published at Cincinnati under date of January 11, 1794. The advertisement states: "Two boats for the present will start from *Cincinnati* for *Pittsburgh*, and return to *Cincinnati* in the following manner, viz: First boat will leave Cincinnati this morning at eight o'clock; and return to Cincinnati, so as to be ready to sail again in four weeks. The second boat will leave Cincinnati on Saturday, the 30th inst., and return to Cincinnati in four weeks as above. And so regularly, each boat performing the voyage to and from Cincinnati and Pittsburgh, *once in every four weeks*."

"Two boats in addition to the above will shortly be completed, and regulated in such a manner that one boat of the four will set out weekly from Cincinnati to Pittsburgh, and return in a like manner.

"The proprietor of these boats having maturely considered the many inconveniences and dangers incident to the common method hitherto adopted of navigating the Ohio, and being influenced by a love of philanthropy, and a desire of being serviceable to the public, has taken great pains to render the accommodations on board the boats as agreeable and convenient as they could possibly be made.

"No danger need be apprehended from the enemy, as every person on board will be under cover, made proof against rifle or musket balls, and convenient port holes for firing out of. Each of the boats is armed with six pieces, carrying a pound ball; also a number of good muskets, and amply supplied with plenty

of ammunition, strongly manned with choice hands, and the masters of approved knowledge.

"A separate cabin from that designed for the men is partitioned off in each boat for accommodating ladies on their passage. Conveniences are constructed on board each boat so as to render landing unnecessary, as it might at times be attended with danger."

The advertisement further states that "Passengers are supplied with provisions, and liquors of all kinds of the first quality, at the most reasonable rates possible."

Travelers are referred to cards of rates, to be seen on board the boats and at the printing office at Cincinnati, for price of passage, &c.

The next event in boat building here, which shows the progress at this point, was the construction of the armed galleys, *President Adams* and *Senator Ross*.

In relation to these, we quote from an extract of a letter from Major Craig, dated May, 1798, which is printed in *Craig's History of Pittsburgh*.

"On the 19th instant the galley *President Adams* was launched, and is now at anchor in the Allegheny. She will be completely equipped in a few days, and will, I am confident, be as fine a vessel of her burden and construction as the United States possesses."

"The keel of the second galley is laid and other materials prepared."

Of this second galley, a letter quoted in the same work above referred to, remarks: "The galley *Senator Ross* has been launched, and is now rigged, and will, in a few days, be fully equipped for the Mississippi.

"She is anchored in the Monongahela abreast of the town. She is certainly a fine piece of naval architecture, and one which will far exceed anything which the Spaniards can show on the Mississippi."

These national vessels were the first sea-going boats which were constructed on the Ohio—although the brig of 120 tons burden, called the *St. Clair*, was built at Marietta, by Commodore Preble, in 1798–99.

From 1802 to 1805 the business of building sea-going vessels seems to have been flourishing here, as in a short period there were constructed the ships *Pittsburgh*, *Louisiana*, *General Butler* and *Western Trader*; the brigs *Nanina*, *Dean* and *Black Warrior*; schooners *Amity*, *Allegheny* and *Conquest*. The ship *Monongahela Farmer* and brig *Ann Jean*, were built during the same period at Elizabethtown, on the Monongahela river. The subsequent career of these vessels, and the adventures therein of those who sailed them, would, without doubt, form a pleasant chapter, but there are no records of their voyages; only a semi-tradition that a ship arriving at an East Indian port was, when visited by the Custom House officer, in danger of confiscation, because the officer did not know, or would not believe there was such a port of entry as Pittsburgh, from whence, according to her papers, she cleared.

[This probably grows out of a statement made on the floor of Congress by Hon. Henry Clay: "To illustrate," he said, "the commercial habits and enterprise

of the American people, he would relate an anecdote of a vessel built and cleared out at Pittsburgh for Leghorn. When she arrived at her place of destination, the master presented his papers to the Custom House officer, who said to him, 'Sir, your papers are forged; there is no such port as Pittsburgh in the world,—your vessel must be confiscated.' The captain laid before the officer a map of the United States, directed him to the Gulf of Mexico, pointed out the mouth of the Mississippi, led him a thousand miles up to the mouth of the Ohio, and thence another thousand up it to Pittsburgh. 'There, sir, is the point from whence my vessel cleared out.' The astonished officer before he had seen the map, would as readily have believed this vessel had been navigated from the moon."]

The building of sea-going vessels was established at Pittsburgh by a French gentleman, Louis Anastasius Tarascon, who emigrated from France in 1794, established himself in Philadelphia as a merchant. In 1799 he sent two of his clerks, Charles Brugiere and James Berthoud, to examine the course of the Ohio and Mississippi from Pittsburgh to New Orleans, and ascertain the practicability of sending ships, and clearing them ready rigged from Pittsburgh to Europe and the West Indies. The two gentlemen reported favorably, and Mr. Tarascon associated them, and his brother, John Anthony, with himself, under the firm of "John A. Tarascon Brothers, James Berthoud & Co., and immediately established at Pittsburgh a large wholesale and retail store and warehouse, a ship yard, a rigging and sail loft, and anchor smithshop, a block manufactory, and all other things necessary to complete sea-going vessels. The first year, 1801, they built the schooner *Amity* of 120 tons, and the ship *Pittsburgh* of 250 tons, and sent the former, loaded with flour, to St. Thomas, and the other, also loaded with flour, to Philadelphia, from whence they sent them to Bordeaux, France, and brought back a cargo of wine, brandy and other French goods, part of which they sent to Pittsburgh in wagons at a carriage of from six to eight cents a pound. In 1802 they built the brig *Nanina*, 250 tons, in 1803 the ship *Louisiana* of 300 tons, and in 1804 the ship *Western Trader* of 400 tons. The schooner *Monongahela Farmer*, was built at Elizabeth, by a company of ship carpenters, who were brought out in 1787, from Philadelphia, by Colonel Stephen Bayard. She was owned by the builders and farmers of the neighborhood, who loaded her with a cargo of flour, and sent her via New Orleans to New York. The brig *Ann Jane* was built in 1803, at Elizabeth, for the Messrs. McFarlane, merchants, and was of 450 tons burden. She was loaded with flour and whisky, and sailed to New York. This brig was one of the fastest sailers of her day, and was run for some time as a packet to New Orleans from New York.

In connection with this exhibit of the successful construction of sea-going vessels at Pittsburgh, it is proper to direct attention to what is said in another chapter in relation to the adaptability of Pittsburgh as a naval depot, and also to the great importance of the improvement of the Ohio river as opening up avenues of wealth and the development of the resources of the country.

The year 1811 was an important one in the history of Pittsburgh. In that year was built the first steamboat for the navigation of the western waters. The construction of this boat was the first step to the fulfillment of a prediction made by John Fitch, quoted in a preceding paragraph of this chapter.

The boat whose steam engine was the first to soothe the spirit of "*poor John Fitch*," was the "*New Orleans*." This boat, as before observed, was built at Pittsburgh in 1811. She was 138 feet keel, and between 300 and 400 tons burden; her cabin was in the hold, and she had port holes; also a bowsprit eight feet in length, in ocean steamer style, which was painted sky blue. She was owned by Messrs. Fulton, Livingston and Rosewalt, and her construction was superintended by the latter gentleman. Her cost was \$40,000. She was launched in March, and descended the river, to Natchez, in December, at which point she took in her first freight and passengers, and from thence proceeded to New Orleans on the 24th of the same month. She continued to ply between New Orleans and Natchez until 1814, making the round trip in ten days, conveying passengers at the rate of \$25 up and \$18 down. On her first year's business she cleared \$20,000 *net*. In the winter of 1814 she was snagged and lost near Baton Rouge. While this boat was constructing, Mr. Fulton traveled across the mountains in company with some gentlemen from Kentucky, who were highly amused with the apparent extravagance of his expectations; and although entertaining a high respect for his genius, yet in the course of the journey, which occupied several days, they jested somewhat upon the probable achievements of steam. This freedom gave rise to a prediction by Fulton, which it is apposite to mention here. "In the course of some conversation on the almost impassable nature of the mountains over which they were dragged with great toil, upon roads scarcely practicable for wheels, Mr. Fulton remarked: 'The day will come, gentlemen, I may not live to see it, but some of you who are younger probably will, when carriages will be drawn over these mountains by steam engines, at a rate more rapid than that of a stage coach upon the smoothest turnpike.'" The then apparently absurdness of this prediction excited great laughter. The predictions of Fitch and of Fulton are fulfilled. As late as 1816, the practicability of the navigation of the Ohio by steamboats was doubted. A writer in the *Western Monthly Magazine* states that, in 1816, he formed one of a company of gentlemen who, watching the long continued efforts of a stern-wheel boat to ascend the Horsetail ripple, five miles below Pittsburgh, came to the unanimous conclusion that such "*a contrivance*" might do for the Mississippi as high as Natchez, but that "We of the Ohio must wait for some more happy *century* of inventions."

Recurring back to 1810, we find in "*Cramer's Magazine Almanack*" for that year, the following:

"A company has been formed for the purpose of navigating the river Ohio in large boats, to be propelled by the power of steam engines. The boat now on the stocks is 138 feet keel, and calculated for a freight as well as a passage boat between Pittsburgh and the Falls of the Ohio."

The boat here alluded to was the one afterwards known as the "New Orleans." The subsequent career of this boat we have mentioned. The formation of companies for the construction of boats at Pittsburgh for particular rivers, appears to have been the popular shape which this branch of business took in 1810, 1811 and 1812. In the publications of the day several such companies are announced. *Cramer's Magazine Almanack* mentions in 1811 the "Mississippi Steam Boat Co.," and that "another company had been formed for the Ohio river." The history of some of those earlier boats we shall briefly record.

The second boat constructed at Pittsburgh appears to have been the "Comet," of twenty-five tons, built by D. French, for Samuel Smith, in 1812-13. She had a stern-wheel and a vibrating cylinder. She made one trip to Louisville in 1813; descended to New Orleans in 1814, made two trips to Natchez, and was sold, and the engine put up in a cotton-gin.

The "Vesuvius" and the "Ætna," of 340 tons each, were built by the "Mississippi Steam Boat Co." in 1813-14. The "Vesuvius," under the command of Captain Ogden, left Pittsburgh in the spring of 1814 for New Orleans; in July, 1816, she was burnt near New Orleans. The "Ætna," under command of Captain Gale, started for New Orleans in March, 1815; and after reaching that point, went into the Natchez trade. She was in continual employ until 1822, when she was condemned as worn out.

The "Enterprise," forty-five tons, was the fourth constructed in this vicinity. She was built at Brownsville, Pa., and made two trips to Louisville in 1814. She departed from Pittsburgh for New Orleans on the 1st of December, 1814, under command of Captain Henry M. Shreve, with a cargo of ordnance. For some time she was actively employed transporting troops. On the 6th of May, 1817, she left New Orleans for Pittsburgh, and arrived at Shippingport (Louisville) on the 30th, being twenty-five days from port to port, and the first steamer that ever arrived at that port from New Orleans; which event the citizens of Louisville celebrated by a dinner to Captain Shreve. The "Enterprise" was lost at Rock Harbor in 1817.

In 1816 the "Franklin," 125 tons, the "Oliver Evans," 75 tons, and the "Harriet," of 40 tons, were built at Pittsburgh. The "Franklin" was built by Messrs. Shiras and Cromwell, and her engine was built by George Evans. She departed from Pittsburgh in December, 1816, and went into the Louisville and St. Louis trade. She was sunk in 1819, near St. Genevieve. The "Oliver Evans" was built by George Evans; left Pittsburgh December, 1816, for New Orleans. She burst one of her boilers in April, 1817, at Point Coupee, killing eleven men. The "Harriet" was constructed and owned by Mr. Armstrong, of Williamsport, Pa.

The "Washington," 400 tons, built at Wheeling about this time, had her engines made at Brownsville. She was the first boat with boilers above deck—the boats previous to that having them in the hold. She, also, by making a round

trip from Louisville to New Orleans, settled the question whether steamboats could be rendered useful as a mode of navigation for the ascending trade, and convinced the public, which had continued doubtful, of the practicability and success of steamboat navigation on the western waters. She was in part owned by Captain Henry M. Shreve, and was built under his immediate direction.

A small boat called the "Pike," was built at Hendersonville, Kentucky, in 1816.

The "General Pike," constructed at Cincinnati in 1818, was the first boat built for the exclusive accommodation of passengers. Her cabin was forty feet long and twenty-five feet wide. In addition she had fourteen staterooms.

The "Expedition," 120 tons, and the "Independent," of 50 tons, were constructed at Pittsburgh in 1818, for the Yellow Stone Expedition for the exploration of the Missouri. The "Independence" was the first steamboat that ascended the Missouri.

The "Western Engineer," built in 1819, near Pittsburgh, under the direction of Major S. H. Long, of the United States Topographical Engineers, for the expedition of discovery to the sources of the Missouri and Rocky Mountains, was the first boat that ascended to Council Bluffs, 650 miles above St. Louis.

In the first years of boat building the progress was slow, and many difficulties impeded the rapid advance of steam navigation. We have given some of the particulars connected with the building of the earlier boats, as illustrative of the progress and the spirit of the business.

From 1817, when the success of steamboat navigation on the western rivers was finally conceded by the public—convinced by the trips of the Washington from Louisville to New Orleans and back in forty-five days—boat building rapidly increased.

In 1818 there were employed on the Ohio and Mississippi rivers, twenty-two steamboats, averaging nearly 230 tons each. In 1818 there were building at different locations on the Ohio, twenty-three boats, of which number—

9 were constructing at Pittsburgh,	2 were constructing at Wheeling,
5 " " " Cincinnati,	1 was " " Corydon,
5 " " " Louisville,	1 " " " Limestone.

In 1835 there was published an official table showing the entire number of boats built at all the points on the Ohio river from 1811 to 1835—giving their names—the year of their construction—the location where built, and their fate; whether sunk, burned, or condemned and broken up. This table, which occupies several pages, we find in Hall's Western Notes, published in 1838, and condense from it the boats built at Pittsburgh and vicinity, omitting the details of their after career, which, however interesting, our space will not admit of.

TABLE

SHOWING THE NAMES OF BOATS CONSTRUCTED AT PITTSBURGH FROM 1811 TO 1835:

Boats and when built.	Boats and when built.	Boats and when built.	Boats and when built.	Boats and when built.
<i>Ætna</i>.....1814	<i>Commerce</i>.....1834	<i>Huron</i>.....1829	<i>Marion</i>.....1835	<i>Rapide</i>.....1819
<i>Allegheny</i>.....1818	<i>Clairborne</i>.....1834	<i>Home</i>.....1829	<i>Madison</i>.....1835	<i>Rambler</i>.....1823
<i>America</i>.....1826	<i>Dolphin</i>.....1819	<i>Huntsman</i>.....1829	<i>New Orleans</i>.....1811	<i>Red Rover</i>.....1828
<i>American</i>.....1824	<i>DeWittClinton</i>.....1826	<i>Hudson</i>.....1829	<i>New York</i>.....1826	<i>Red Rover</i>.....1829
<i>Allegheny</i>.....1830	<i>Delaware</i>.....1828	<i>Hatchee</i>.....1829	<i>New Penn'a</i>.....1827	<i>Ruhama</i>.....1829
<i>Abeona</i>.....1830	<i>Dove</i>.....1831	<i>Herald</i>.....1829	<i>Neptune</i>.....1828	<i>Return</i>.....1832
<i>Argus</i>.....1831	<i>Despatch</i>.....1832	<i>Henry Clay</i>.....1831	<i>N. America</i>.....1828	<i>Robt. Morris</i>.....1835
<i>Antelope</i>.....1831	<i>Detroit</i>.....1835	<i>Huntress</i>.....1834	<i>Nile</i>.....1829	<i>Rover</i>.....1835
<i>Aid</i>.....1834	<i>Dover</i>.....1835	<i>Hunter</i>.....1834	<i>New Jersey</i>.....1830	<i>St. Louis</i>.....1818
<i>Alert</i>.....1835	<i>Dayton</i>.....1835	<i>Independence</i>.....1818	<i>Napoleon</i>.....1831	<i>Shamrock</i>.....1827
<i>Algonquin</i>.....1835	<i>Expedition</i>.....1818	<i>Illinois</i>.....1826	<i>N. Brunswick</i>.....1832	<i>Shepherdess</i>.....1827
<i>Arabian</i>.....1835	<i>Eclipse</i>.....1823	<i>Industry</i>.....1829	<i>Nimrod</i>.....1832	<i>Star</i>.....1828
<i>Adventure</i>.....1835	<i>Echo</i>.....1826	<i>Ivanhoe</i>.....1834	<i>Olive Branch</i>.....1819	<i>Stranger</i>.....1828
<i>Buffalo</i>.....1814	<i>Erie</i>.....1826	<i>James Monroe</i>.....1816	<i>Ohio</i>.....1830	<i>Sam Patch</i>.....1830
<i>Ballie Packet</i>.....1819	<i>Essex</i>.....1827	<i>James Ross</i>.....1818	<i>Olive</i>.....1830	<i>Scout</i>.....1831
<i>Bolivar</i>.....1825	<i>Enterprise</i>.....1830	<i>Jubilee</i>.....1826	<i>O'Connell</i>.....1833	<i>Sangamon</i>.....1832
<i>Baltimore</i>.....1828	<i>Eagle</i>.....1830	<i>Jas. O'Hara</i>.....1828	<i>Ohioan</i>.....1833	<i>Siam</i>.....1835
<i>Boston</i>.....1831	<i>Franklin</i>.....1817	<i>Juniata</i>.....1832	<i>President</i>.....1824	<i>Selina</i>.....1835
<i>Baltic</i>.....1831	<i>Florida</i>.....1826	<i>John Nelson</i>.....1833	<i>Phoenix</i>.....1823	<i>Tamermene</i>.....1818
<i>Boon's Lick</i>.....1833	<i>Favorite</i>.....1822	<i>Kentuckian</i>.....1829	<i>Pittsb'g & St</i> } 1823	<i>Thos. Jefferson</i>.....1818
<i>Big Black</i>.....1835	<i>Friendship</i>.....1825	<i>La Fayette</i>.....1825	<i>Louis Pack't</i> }	<i>Telegraph</i>.....1819
<i>Comet</i>.....1812	<i>Fame</i>.....1826	<i>Liberator</i>.....1826	<i>Pittsburgh</i>.....1823	<i>Talisman</i>.....1828
<i>Car of Com'rce</i>.....1819	<i>Free Trader</i>.....1832	<i>L'y Washing'n</i>.....1826	<i>Pennsylvania</i>.....1823	<i>Talma</i>.....1829
<i>Cumberland</i>.....1819	<i>Fame</i>.....1832	<i>Lark</i>.....1829	<i>Paul Jones</i>.....1825	<i>Trenton</i>.....1829
<i>Columbus</i>.....1826	<i>Farmer</i>.....1833	<i>Louisville</i>.....1831	<i>Pocahontas</i>.....1825	<i>Tallyho</i>.....1829
<i>Commerce</i>.....1826	<i>Flora</i>.....1835	<i>Lancaster</i>.....1832	<i>Powhatan</i>.....1828	<i>Tariff</i>.....1829
<i>Cumberland</i>.....1828	<i>Geo. Madison</i>.....1817	<i>Messenger</i>.....1826	<i>Phoenix</i>.....1828	<i>Transport</i>.....1832
<i>Caroline</i>.....1828	<i>Gen. Jackson</i>.....1817	<i>Maryland</i>.....1827	<i>Plaquemine</i>.....1828	<i>Tempest</i>.....1835
<i>Citizen</i>.....1829	<i>Gen. Neville</i>.....1822	<i>Missouri</i>.....1828	<i>Pennsylvania</i>.....1827	<i>Tuskina</i>.....1835
<i>Cora</i>.....1829	<i>Gen. Brown</i>.....1825	<i>Monhican</i>.....1829	<i>Packet</i>.....1829	<i>Uncle Sam</i>.....1829
<i>Corsair</i>.....1829	<i>Gen. Wayne</i>.....1825	<i>Monticello</i>.....1829	<i>Peruvian</i>.....1830	<i>Uncas</i>.....1829
<i>Carrolton</i>.....1831	<i>Gen. Scott</i>.....1825	<i>Mobile</i>.....1830	<i>Pittsburgh</i>.....1831	<i>Vesuvius</i>.....1814
<i>Columbus</i>.....1831	<i>Gen. Coffee</i>.....1826	<i>Mohawk</i>.....1831	<i>Planter</i>.....1831	<i>Victory</i>.....1829
<i>Courier</i>.....1831	<i>Gondola</i>.....1830	<i>Mediterranean</i>.....1832	<i>Privateer</i>.....1833	<i>Van Buren</i>.....1833
<i>Choctaw</i>.....1831	<i>Gleaner</i>.....1830	<i>Missourian</i>.....1832	<i>Protector</i>.....1834	<i>West Engineer</i>.....1839
<i>Chief Justice</i> } 1832	<i>Gazelle</i>.....1832	<i>Mobile Farm'r</i>.....1832	<i>Potosi</i>.....1834	<i>William Penn.</i>.....1825
<i>Marshall</i> }	<i>Galiman</i>.....1834	<i>Miner</i>.....1833	<i>Plough Boy</i>.....1834	<i>Wm D. Duncan</i>.....1827
<i>Chester</i>.....1832	<i>Herald</i>.....1824	<i>Majestic</i>.....1833	<i>Pawnee</i>.....1835	<i>Woodsman</i>.....1831
<i>Chicasaw</i>.....1832	<i>Hercules</i>.....1826	<i>Moque</i>.....1833	<i>Pioneer</i>.....1835	<i>Warrior</i>.....1832
<i>Cayuga</i>.....1833	<i>Huntsville</i>.....1829	<i>Minerva</i>.....1833		

Making 197 boats built in the period embraced in the table. There were built at Brownsville in the same period, twenty-two, and at Beaver, seven.

In 1836 the constuction of boats was greatly increased. In that year the Alton, Asia, Amite, Boonville, Bee, Brighton, Boguehoma, Baltimore, Columbian, Chamois, C. L. Bass, Camden, Corinthian, Emerald, Eutaw, Florida, General Wayne, Gipse, Grand Gulph, George A. Bayard, Georgia, Huntsville, Havana, Howard, Harkaway, Kentucky, Kansas, Lilly, Loyal Hannah, London, Louisville, Mobile, Massillon, Nick Biddle, Newark, New Beaver, New Lisbon, Ontario, Ocoola, Palmyra, Pavillion, Prairie, Paris, Quincy, Robt. Morris, Rienzi, Salem, Sandusky, Savannah, St. Peters, Steubenville Packet, St. Louis, Troy, Tremont, United States, Vandalia, Vermont, Wabash, Warren, Wm. Wirt, Wm.

Hurlburt—in all 61, were built, being 252 steamboats constructed at Pittsburgh from 1811 to 1836. Of these there were finished in

1811, 1	1822, 2	1830, 12
1812, 1	1823, 5	1831, 17
1814, 3	1824, 3	1832, 18
1816, 1	1825, 9	1833, 12
1817, 5	1826, 16	1834, 10
1818, 7	1827, 7	1835, 19
1819, 8	1828, 16	1836, 61
	1829, 25	

One circumstance among these records of boat building is noticeable, and that is the pioneer character of many of the boats constructed at Pittsburgh.

For instance, the "New Orleans" was the first steamboat to navigate the Ohio and Mississippi. The "Independence" was the first to ascend the Missouri. The "Western Engineer" the first to reach Council Bluffs; and the "American" is mentioned in Niles' Register, in April, 1825, as the first to ascend the Monongahela. The "Enterprise" the first to ascend Red river, and to make the return voyage from New Orleans up the Ohio.

In 1837 there were owned here and running in regular lines to this city, sixty-three boats, of an average value of \$15,000 each, being a total of \$945,000.

In 1846 there were built here sixty-three steamboats, besides keels, barges, &c. The tonnage of the steamboats was 11,084 tons.

From 1852 to 1856 there were constructed at this point, steamboats as specified below:

	Steamboats.	Tonnage.	Value.
1852,	70	—	\$1,050,700
1853,	78	21,007	1,560,000
1854,	83	14,692	1,660,000
1855,	72	15,360	1,440,000
1856,	59	11,424	1,180,000

The business of 1856, from low water, was less, probably one-third, than it would otherwise have been. The number of boats constructed in that year, and the tonnage thereof, shows a falling off from previous years; notwithstanding which it contrasts brightly with the six boat building points on the Ohio, as given below:

The year of 1856 was an exceptional year in the hydraulics of the Ohio. The river, by reason of extreme low water from May until December, and by ice from December until February, being almost entirely unnavigable. A letter addressed in 1865 by a committee appointed by the citizens of Pittsburgh, in reply to interrogatories propounded by Rear Admiral Davis, chairman of a naval commission to recommend a site for a western navy yard, in response to interrogation 11th,—“For how many months in the year can a boat drawing (10) ten

feet or less pass from Pittsburgh to the Gulf of Mexico," state: "We find on examination that, in 1860, there were 118 days during that year when a boat could pass safely down the river from this port to the Mississippi, drawing eight feet water. In the year 1861 there were 148 days when the channel depth from this port out was over eight feet; in 1861 there were 136 days with same result; and in 1863 there were 127 days that the same amount of water was in the channel." They further stated: "Although certain statistics given, show that for over one-third of the year there is passage from Pittsburgh to the Mississippi for vessels drawing from eight to ten feet, there is an aggregate of many weeks throughout the year in which ships drawing twelve to fourteen feet can readily find water for navigation, with frequent freshets on which vessels of fifteen to twenty feet draught can be floated to the seaboard." In this connection it is proper to say that there are years in which, for three-fourths of the days, vessels drawing from eight to ten feet, would find plenty of water; and that if the government would, as they of right should, apply plans already tested to equalizing and maintaining the water of the Ohio, there would be a continuous and ample navigation the year round, and many sea going vessels would clear from Pittsburgh, laden with Pittsburgh manufactures for foreign markets.

Of 177 steamboats, barges, keel-boats, &c., constructed on the Ohio river in 1856, there were built at Pittsburgh:

		Tonnage.
Steamers,	59	11,424 60-95ths.
Keels,	15	664 54 "
Barges,	14	1,417 23 "
Flatboats,	20	553 8 "
Total,	108	14,059 45-95ths.

		Tonnage.
At Cincinnati, Steamers,	30	8,281 53-95ths.
" " Barges,	2	295 73 "
Total,	32	8,541 26-95ths.

At New Albany, steamers, 18; at Louisville, steamers, 11; at Jeffersonville, steamers, 5; at Madison, steamers, 2; at Paducah, steamers, 1. Total, 37.

In 1857 there were completed at Pittsburgh 84 steamboats, of the value of \$1,680,000.

From 1857 to 1875, a period of eighteen years, there was constructed in the vicinity of and enrolled in the district of Pittsburgh, six hundred and forty-nine steamboats, whose aggregate tonnage was one hundred and fifty-five thousand two hundred and fifty-three tons, and whose value was twenty-one millions eight hundred and eighty-six thousand and seventy-three dollars. In the same period there was constructed five hundred and eighteen barges, whose tonnage was one hundred thousand eight hundred and eighty-three tons. Also four hundred and

ninety-six keel and flat boats, having a tonnage of twenty-one thousand six hundred and sixty-two tons, and twenty-six ferry boats, with a tonnage of twenty-six hundred and eighty-one tons, being an aggregate tonnage construction of two hundred and eighty thousand four hundred and seventy nine tons, having an aggregate value of over twenty-two million of dollars.

The following table shows number and tonnage of steamboats, &c. constructed in the vicinity of and enrolled at the Port of Pittsburgh, from 1857 to 1875.*

Year.	1858.		1859.		1860.		1861.		1862.		1863.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Steamboats,	27	4,930	53	8,678	68	11,892	14	2,774	50	6,992	81	16,625
Ferry Boats,	2	168	1	109	1	129	1	163	..	....	1	205
*Keel and	10	386	10	386	6	129	21	762	61	1,870	88	4,055
Flat Boats, } Barges, . . .	10	1,671	6	347	8	751	8	808	13	1,746	19	2,166
Totals, . .	49	7,177	70	9,520	83	12,900	44	4,507	124	10,608	189	23,641

Year.	1864.		1865.		1866.		1867.		1868.		1869.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Steamboats,	84	18,361	45	13,666	46	14,206	18	7,327	13	2,553	26	8,761
Ferry Boats,	1	139	9	716	2	315	3	361	3	136	1	73
*Keel and	59	3,009	140	5,978	68	2,879	7	192	9	701	5	516
Flat Boats, } Barges, . . .	15	2,102	30	4,911	31	8,363	36	7,498	70	12,986	43	9,025
Totals, . .	169	23,711	224	25,265	147	25,703	64	15,608	95	16,370	75	18,375

Year.	1870.		1871.		1872.		1873.		1874.		1875.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Steamboats,	29	11,631	33	10,689	22	8,975	25	5,392	3	242	12	2,462
Ferry Boats,	..	....	2	96	..	....	1	80	..	....	..	....
*Keel and	3	272	1	67	3	183	1	47	2	172	2	58
Flat Boats, } Barges, . . .	25	6,480	30	6,067	30	7,124	106	21,011	34	7,306	4	581
Totals, . .	57	18,383	66	16,919	55	15,382	133	26,530	39	7,720	18	3,101

*There was in the same period enrolled 113 canal boats, with a tonnage of 4,702 tons. Also constructed in 1859, 1863, 1865 and 1875, one propeller each, and in 1873 three. Also in 1862, 1863 and 1866 one steam canal boat each year. Also in 1867 one schooner, and in 1872 one. Also in 1873 and 1874 two dredge boats each year.

The subjoined table presents the names of the steamboats each year, from 1858 to 1875:

1858.	T. D. Horner,	Commercial,	Monitor,	Savanna,	Louisville,
Venango,	St. Cloud,	O. H. Ormsby,	Tigress No. 2,	Sylph,	Roanoke,
Lake Erie, No. 3,	Izetta,	John F. Carr,	Volunteer,	Hettie Hartupes	Evening Star,
Sky Lark,	Collier,	Sampson,	Silver Cloud,	Arcola,	Financier,
Echo,	Telegraph,	Dick Fulton,	Key West, No. 3,	Alice,	A. Jacobs,
Rowena,	Dunbar,	No. 2,	White Rose,	Olive,	Maggie Hays,
Pembinauw,	Clara Poe,	Tycoon,	Liberty, No. 3,	Carrie,	Kate B. Porter,
Canada,	Belle Peoria,	"W. H. B."	Coal Bluff,	Tiger,	Alex. Chambers
Decotah,	Persia,	V. F. Wilson,	Ella Faber,	J. T. Stockdale,	Painter, No. 2,
Ida May,	Bellewood,	Isaac Hammett,	Nellie Rogers,	Leni Leoto,	Venture,
Silver Lake,	Dan'l B. Miller,	John T. McCombs,	Tempest,	Capt. John Brickell,	Glide, No. 3,
Victoria,	George Thompson,	Kenton,	Starlight,	Charmer,	Petrolia, No. 2,
Keokuk,	Southern Flora,	Sunshine,	Orient,	Oil Exchange,	Charlie Chever,
Panola,	Vigo,	Robt. Fulton,	Cottage, No. 2,	General Irwin,	A. Foster,
Cedar Rapids,	Lone Star,	Daniel Bushnell,	Advance,	Ida Rees,	Columbia,
Jim Watson,	David Lynch,	James Hale,	Argonaut,	Argosy, No. 2,	Alice,
C. Rogers,	1860.	Robert Lee,	Duchess,	Silver Cloud,	Kate Putnam,
J. S. Cosgrave,	West Wind,	Westmoreland,	Emma, No. 2,	No. 2,	Virginia Barton
Elmira,	Storm, No. 2,	Col. Stelle,	Shark,	Natrona,	Lotus,
Diana,	Hawk Eye State	Citizen.	Whale,	Petrel, No. 2,	Nora,
Faunie,	Mohawk,	1861.	Mary E. Forsyth	Bengal Tiger,	Mist,
A. G. Brown,	Sucker State,	Silver Lake,	Eclipse,	Tom Rees,	Guidon,
Robt. Watson,	Porter Rhodes,	No. 2,	Dick Fulton.	Leonidas,	Stella,
Flora Temple,	Sunny Side,	Lexington,	1863.	Julia,	Hawk,
Emma Bett,	Diadem,	Continental,	Armada,	Paragon,	Storm, No. 3,
Eagle,	Gen Anderson,	Bill Henderson,	Armenia,	Lion,	Katie,
Vulcan,	Science,	Florence,	Nevada,	Hawkeye, No. 2,	Pilgrim,
Era No. 3.	Arago,	Leila,	Emperor,	Rover,	Wananita,
1859.	Dolphin,	G. W. Graham.	Argosy,	Adelaide,	Anna,
Conestoga,	Porter,	Igo,	Jennie Rogers,	Hunter, No. 2,	Onward,
Niagara,	Alfred Robb,	Emma Graham,	Schuyler,	Urilda,	Arrow,
Sam. Clark,	Webster,	Billy Hodgeson,	Majestic,	Panther,	W. F. Curtis,
Allegheny Belle	Maquota City,	Cottage,	Davenport,	Tom Farrow,	Gipsev,
No. 4,	S. C. Baker,	Lilly Martin,	Lilly Martin,	Black Hawk.	John S. Hall,
Northener,	Chas. Miller,	Carrie Jacobs.	Carrie Jacobs.	Advance, No. 2,	Zephyr,
John Ray,	Alamo,	Eglantine,	James R. Gil-	Leopard,	Bob Connell,
Des Moines City	Gallatin,	Warren Packard	more,	Star,	Veteran,
J. N. Kellogg,	Rose Douglass,	1862.	Fox,	N. J. Bigley,	Little Alps,
Coloma,	Sabine,	Lacon,	Emma,	Darling,	Rocket,
Col. Gus. Linn,	Frontier City.	Monterey,	City of Pekin,	Kate Robinson,	Little Jim Rees,
Post Boy,	Wild Cat,	Petrel,	Sea Gull,	Wm. Barnhill.	Allegheny,
Emma,	Mustang,	Tiber,	Thistle,	1864.	Centralia,
Jacob Painter,	Arab,	Estella,	R. K. Dunkerson	Hercules,	Spray,
Red Chief No. 2,	May Duke,	Monitor, No. 2,	Camelia,	Jos. Pierce,	Iron City,
Leon,	Gazelle,	Express.	Silver Lake, No.	Warmer,	Yorktown,
Nile,	Jackson,	Market Boy,	4,	Echo, No. 3,	Leclair, No. 2,
South Bend,	Cricket No. 2,	Parthenia,	Oil City,	Silver Spray,	Commonwealth
Undine,	Franklin,	Navigation,	Echo No. 2,	Alpha,	Jos. Fleming,
Uncle Ike,	Time,	Silver Lake,	Glhide,	Golden Eagle,	Coal City,
Julia Roane,	Ad. Hine,	No. 3,	Princess,	Damsel,	Starlight,
Indianola,	Linden,	Uncle Sam,	Mercury,	Benton,	Picket,
Eva No. 4,	Talequah,	New York,	Colossus,	Brilliant,	Tamaulipas,
John C. Calhoun	Lilly,	R. H. Barnum,	Calypso,	Little Giant,	Champion,
Mimmerlyn,	Era No. 5,	Glhide,	Geneva,	Little Whale,	Alex. Speer,
Pine Bluff,	Key West, No. 2	Grampus No. 2,	Welcome,	Hero,	Argosy,
Two Kings,	Judge Fletcher,	Exchange,	Albert Pearce,	Traveler,	A. J. Baker,
News Boy,	Era, No. 6,	Laura Bell,	Norman,	Argos,	Bee,
Indian No. 2,	Uchee,	Golden Era,	Bertha,	Kate Kearney,	Laura, No. 2,
Andy Fulton,	Wm. H. Young,	Juliet,	James Rees,	M. S. Mepharm,	Hard Times,
Grey Eagle,	Jonas Powell,	Marmora, No. 2,	Gen. Grant,	Ontario,	Coal Valley,
Cotton Plant,	Cornie,	Saint Clair,	Vigilant,	Hyena,	Albion.
Laclaire,	Liberty, No. 3,	Brilliant,	Nightingale.	Montana,	1865.
Lucy Gwin,	La Salle,	Forest Rose,	Nyanza.	Bayard,	Armadillo,
Lioness,	Arkansas,	Romeo,	Muscatine,	Sewickley,	W. H. Osborn,
Mingo,	Emma Duncan,	New Era,	America,	Petrolia,	Deer Lodge,
Marisanna,	Matamoras,	B. C. Levi,	Prairie State,	Cherokee,	Fayette,
Picayune No. 3,			Key West No. 4		Belle,

Lark, Lorena, Dart, Ajax, Parana, Amelia Poe, J. S. Neel, Greenback, Reindeer, Forest City, Mink, Nimrod, Pike, Gleaner, Emma Logan, Dictator, Samuel Roberts Minnie, Wild Duck, Fearless, Peerless, Imperial, Oil Valley, Julia No. 2, Tidioute, Keystone, C. D. Fry, Neville, Antelope, Sybil, John Hanna, Kangaroo, Mary Davage, Ida Rees, No. 2, Wild Boy, Annie Lovell, Messenger, Barnett, Fred Wilson, Grey Eagle.	Peter Balen, Dan Hine, Tablequah, Minnesota, Miner, Elkhorn, Nile, Blue Lodge, Gray Hound, Chieftain, Pine Bluff, Arabian, Resolute, Elector, Rapidan, R. C. Gray, Lotus, No. 2, S. M. Crane, Fair Play, Fort Smith, W. A. Caldwell, Van Buren, Ezra Porter, Belle Vernon, Quickstep, Rochester, Atlanta, Simpson Horner Sam. Brown, Flicker, Mary Ann, Grand Lake, Glendale, Dexter, Jim Brown, Exchange, Baltic.	J. N. M'Cullough Rapidan, No. 2, Abe Hays, J. F. Dravo, Selma, Mary Alice, Reliable— (Schooner.) 1868. Peninah. Sallie. J. A. Blackmore Andrew Ackley Mountain Boy, Park Painter, A. E. Pierpont, J. D. Johnson, Galatea, M. Whitmore, Ft. Gibson, W. M. Stone. Economist. 1869. Mollie Ebert, Silver Bow, Carrie V. Kountz, Three Lights, Nick. Wall, Colossal, Minneapolis, Flirt, Ironsides, Australia, Mountain Belle Matamoras, No. 2, Lotus, No. 3, Jefferson, Barranquilla, Julia A. Rudolph, Batesville, Grand Lake, No. 2, Chas. H. Duffee Hornet, No. 2, Lioness, No. 2, Phoenix,	Harry A. Jones, Fred. Wilson, No. 2, Tom Rees, No. 2 Samson, No. 2. 1870. Carrie V. Kountz, Arlington, City of Evans- ville, Juniata, Far West, Lake Superior, Red Wing, Trader, Fontenelle, Granite State, R. J. Lockwood Exchange, Carrie Converge Tidal Wave, Mollie Moore, N. J. Bigley, No. 2, George Roberts Thirteenth Era. Oil Valley, No. 2 Samuel Clarke, Joseph H. Big- ley, Brill, John A. Wood, Wm. Cowan, Oceanus, Veteran, No. 2, R. J. Grace. Henry C. Yeager J. Sharp McDonald. 1871. May Lowery, John Bigley, Belle of Texas, Glencoe, Tom Dodsworth John Gilmore, D. T. Lane, E. H. Duffee,	Esperanza, Nellie Peck, Lady Lee, West Virginia, Katie P. Kountz Baton Rouge Belle, Tom Lysle, James Jackson, Charley McDon- ald, Belle Rowland, Geneva, Cora Bell, Park Painter, No. 2. Storm, Jos. A. Stone, John Penney, J. S. Mercer, Robert Semple, San Juan, Alice Brown, John F. Tolle, Abe. McDonald, Ben. Wood, N. M. Jones, Athletic. 1872. John Dippold, George Lysle, Chas. Brown, Evan Williams, Smoky City, L. C. McCormick Iron Mountain, Exporter, Grand Lake, No. 2. Western, Murillo, Jos. A. Stone, Key West. Little Andy Fulton. Wm. Wagner, Acorn, Nellie Speer, Oakland, Samuel Miller,	Ella Layman, My Choice, Relief, Reliable, No. 2, (Schooner.) Emma Graham, M. Dougherty, Billy Collins, Josephine, Hiram, Kate Dickson, Elsie, Lillie, Alex. Foster, Madoc, Iron City, J. C. Risher, Maggie Smith, Ark. Belle McGowan Is. Keefer, Enterprise, B. D. Wood, L. W. Morgan, Nellie Walton, Jos. Walton, Shippers Own. Transit, Bee, Paragon. 1874. Hippopotamus, Rainbow, Joseph Warner. 1875. Chas. A. Wood, Carroll, Benton, Thomas J. Darragh, Jack Gumbert, Andrew Foster, Wm. S. Holt, Seven Sons, Dauntless, John L. Rhoads Big Foot, George Baker.
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On account of the great abundance of the different kinds of timber, the cheapness of iron, of labor, of paint, and of all other materials used in the construction of steamboats, they can be built at a less cost at Pittsburgh than in any western port, and consequently they are built and fitted out here more steamers than at any three or four other cities of the West. The report to Rear Admiral Davis before cited, states that there are in the vicinity of Pittsburgh, including the Monongahela valley, eleven ship-yards. That the boats are built equally as well as elsewhere, there is no denial; and were there, the superb, powerful boats which have year after year been sent out from this port, would at once assert and maintain the superior ability of our shipwrights. The leading city for nearly seventy years engaged in the construction of boats for the western waters, there is a vast fund of practical knowledge accumulated from those many years of

experience, existing in the minds of the contractors and mechanics employed in that branch of trade in Pittsburgh; and such boats as the "Buckeye State," the "Pennsylvania," the "City of Memphis," the "Great Republic," and scores of others similar, attest the skill with which that knowledge is brought to bear in the production of boats unequaled on the western waters for speed, beauty, comfort, convenience and cheapness.

There are few more pleasing sights than one of those beautiful boats, of which the Pittsburgh boat-builders have launched so many, speeding its way along our western rivers, nor is there any pleasure trip so filled with variety, comfort and restfulness to the weary body and mind, as one on a well appointed western steamer, to whatsoever point time or inclination may dictate. The following verses from a lengthy poem* addressed nearly thirty years ago to one of those beautiful creations of the skill of Pittsburgh mechanics, is quoted here as illustrative of western river scenery and western boats:

O'er many an azure tinted river's breast,
Thy snowy form in graceful flight shall glide,
Afar, where still on "Red" the wild deer drink,
Where "Mississippi" rolls his turbid tide;
On rivers sparkling 'neath a Southern sun,
On Northern waters blue and coldly clear,
Where summer mantles verdure to the brink,
Or snows and rocks make even home itself look drear.

Past cliffs whose shadows gloom the waters 'round,
Past broad savannas sloping to the shore,
Past forests old, where drooping o'er the heights
Frown oaken Patriarchs garbed in wild moss hoar;
On all sunlight shall find thee beautiful,
Moonlight hang graces on thy snowy side—
And ever in the great or lesser light,
Bright waters leaping greet thee like a Triton's bride.

* * * * *

On rivers gloomy from the dearth of man,
Where old trees nod a welcome stately slow;
Prairies smile on thee beneath the sun,
While dimple like their dew drops show,
Where tangled thickets fringing river sides,
Their greetings whisper to the stranger swift;
While soft winds creeping timid from the shore,
Bear to thy decks the wild woods fragrant gift.

*By Geo. H. Thurston.

Past forests vine hung to the river's edge,
 Thou'll speed with sea bird grace thy restless course;
 Whilst Silence startled echoes frightened back,
 The loud, rough clamor of thy breathing hoarse;†
 Astonished, cliff to cliff loud mocks thy voice,
 The waters murm'ring wonder 'fore thee shrink;
 Then mad'ning, foam complaining in thy wake,
 And rush along the river's pebble scattered brink.

The tangled thicket dwelling fay, who haunts
 The long glade smiling wanly 'neath the moon,
 Thou'lt oft times fright, as sudden round the bank
 Thy fires shooting light the jutting gloom;
 For which will tricksey Puck, in vengeful glee,
 With frequent fright the careful wheelsman fag,
 Asudden starting up afore the prow,
 In shape of sawyer huge or jagged sharp limbed snag.

* * * * *

When night her wings of slumber brooding, stretches
 Calm o'er thy tenantry of anxious life,
 The impatient pulses of each bosom hushing,
 The heart's wild hoping and yet wilder strife,
 Thy iron heart with clanging pulses beats
 As strongly as throughout the busy day,
 While Echo chasing in her airy boat,
 Thy hoarse voice mocks the live long night in phantom play.

* * * * *

The red blood mantles with a deeper glow,
 The heart swells prouder in its throbbings proud;
 And thought grows eloquent with prideful praise,
 The tongue feels eager to express aloud,
 When men thy noble toil admiring praise,
 We think what land through time shall be so famed,
 As home of those who this creation formed,
 And list our own free nation as their birth place named.

* * * * *

O noble Fulton! Fitch! ye fame crowned twain,
 No monument of marble, bronze, ye need;
 No sculptured column piercing air, with long
 Inscription for the passer-by to read;

†All Western steamboats are run with high-pressure engines. The rush of steam through the escape pipes producing a sound not unlike hoarse laborious breathing.

Where e'er through lands fair rivers laughing run,
Where e'er broad seas heave moonward round the earth,
There glide proud monuments in useful pomp,
That show thine honored genius and make known thine worth.

Another useful monument to worth—

Speed then fair namesake of a noble State;*
Each clanging pulse a hymn to genius sing,
Each breath a requiem for their hard cast fate;
Thy smoke cloud banner streaming on the wind,
Emblazoned thick with fiery stars by night,—
Thy voice proclaiming loudly 'long the shore,
Man's giant triumph o'er the elements strong might."

It has not been alone in building those beautiful wooden boats that have, where throughout our western States, "fair rivers laughing run," given Pittsburgh boat builders' fame that Pittsburgh has attained a reputation as a ship building city. In the construction of iron vessels the mechanics of Pittsburgh claim ability, and have attained success. In vessels for the peaceful pursuits of commerce, and in those for the sterner uses of war, they have fully demonstrated Pittsburgh's facilities for the production of iron ships.

The first boat built of iron that navigated the western waters, was the "Valley Forge," built in 1839, by Wm. C. Robinson, Benjamin Minis and Reuben Miller, Jr., then proprietors of the Washington Iron Works, now carried on under the style of Robinson, Rea & Co.

The hull of the "Valley Forge" measured on deck 180 feet. The breadth of beam was 29 feet, and depth of hold $5\frac{1}{2}$ feet. Across her deck and guards at their widest point, the breadth was $49\frac{1}{2}$ feet. The frame of the boat was of angle iron, the bottom and deck beams T iron, and the outside one-fourth of an inch Juniata boiler plate. The boiler or first deck was all plate iron. The floor and hull plates were of a plain smooth surface, the sheets being closely jointed at the butts. The sides were clinker lap. The keel, which was five-eighths of an inch iron, was laid in the summer of 1838, and the vessel was launched in the summer of 1839, and left the same fall on her first trip to New Orleans. There was one iron bulk head the entire length, divided into eight water tight sections. Her tonnage was about four hundred tons, and her cost \$60,000. She ran from Pittsburgh to New Orleans, St. Louis and Nashville, and ascended the Cumberland river as high as "Rome," Georgia. She continued to run until 1845, although once sunk by running upon a snag, but was raised and repaired. In the spring of 1845, being unable to compete with boats built under improved plans with greater carrying capacity, she was dismantled, and the hull was cut apart and sold to iron manufacturers, and made into various descriptions of mer-

*New Hampshire.

chant iron. The last trip of the "Valley Forge" was in July, 1845, from Pittsburgh to McKeesport, with a large pic-nic party.

There has been built at Pittsburgh in all, some fifteen or eighteen iron boats, of which nine were war vessels. Two of these were constructed at the Fort Pitt Foundry works, famous for its manufacture of Columbaids. These two were built in 1845. They were each 210 feet keel, 21 feet beam, 17 feet depth of hold, and constructed of iron, varying from one-half to three-sixteenths of an inch in thickness. One of these, the "Jefferson," was constructed at Pittsburgh, taken apart and transported to Oswego, and there put together again and launched. She was perfectly satisfactory in all respects, and cost \$180,000, and is still in service. The other was called the "George M. Bibb," after the then Secretary of the Navy. The "Bibb" was launched at Pittsburgh, and went down the Ohio and the Mississippi to the Gulf of Mexico. Her cost was \$250,000, and she is still in service. These two were two years in building. The iron revenue cutter "Michigan," now in service on the lakes, was also built at Pittsburgh, being set up complete on the lot at the junction of First and Liberty avenues, now occupied by the First Ward Public School. She was then taken to pieces and transported to the lakes, and there put together and launched. The iron for her construction was furnished from the famous Sligo Mills, of Lyon, Shorb & Co., from their best Juniata blooms, and 350 $\frac{3}{4}$ tons of this celebrated brand of iron was used in the construction of the vessel. In 1863 two other vessels were built on the ground adjoining the Sligo Mills, of iron furnished from these works. One, the "Manayunk," was a turret ship, armed with two fifteen inch guns. Her length was 224 feet, beam 43 feet 3 inches, depth of hold 12 feet, draught of water 12 feet, and the inside diameter of her turret 21 feet. This vessel was pronounced by good naval authority as a most admirable boat, in all respects safe to sail in around the world. The other, called the "Umpqua," was a lighter draught, intended for river service, but also a turret vessel, or monitor, as they were popularly called during the war. Her length was 225 feet, with 45 feet beam, 7 feet 10 inches hold, and drew 6 feet 6 inches water. The height of her turret was 9 feet, and its inside diameter 20 feet. She was armed with one eleven inch gun and one one hundred and fifty pounder Parrot rifle gun. There was used in the construction of the "Manayunk" 1,247 $\frac{1}{2}$ tons of iron, and in that of the "Umpqua" 813 tons. The plates for the turrets of these vessels were inch plates ten times repeated. The iron of the skins or hulls was from three-fourths to one-half inch in thickness. Both these vessels went to sea by way of the Ohio and Mississippi rivers. Two other war vessels for the United States navy, were also constructed at Pittsburgh about 1845. One was a small revenue cutter, called the "Hunter," and the other, a second class frigate, called the "Allegheny," both of which went down the Ohio to the ocean, and are still in service. In 1864-5 there was also built for the government, of iron, the "Marietta" and the "Sandusky." In addition to these, several boats for the peaceful uses of commerce have been constructed at Pittsburgh, of iron

furnished by her mills, two of these now navigating Brazilian rivers, were built in 1874.

In closing this chapter, in which a limited sketch is attempted of Pittsburgh facility and ability in the construction of vessels, it is proper, in connection with the brief account of the iron vessels built at the city, to allude again to the most admirable location Pittsburgh is for a naval construction arsenal. In the vessels of war mentioned as constructed, her power in that respect was fully tested, while the ease with which those ships descended the rivers to the ocean, or were transported in sections and put together at other points, makes its own argument as to facility. No expensive governmental works were in any of the instances required to be built before proceeding with the work. The mills and machine shops in daily use, turned out the material as required, and the mechanics of the city found themselves perfectly competent to fashion the hulls and complete the ships. When this facility in the matter of iron vessels is shown; ability in wooden ones, tested for years, when the security of the position is considered, and the facilities of sending vessel after vessel, of almost any draught, to the ocean, apparent from actual tests,—and the great supply of all materials, whether of woods or metals, or fabrics, manifest, there seems much reason why government should find it desirable to locate here a naval construction yard. Is there not also much to justify the belief that, in the future, with increased facilities in navigating the Ohio, that Pittsburgh built ships may become navigators of the ocean, as in past years; and their construction be one of her prominent manufactures? The day for the full use of the Ohio and our other western rivers has not yet fully dawned. When it does, the great facilities Pittsburgh possesses of materials and skilled workmen, will keep her in the front as heretofore as a great ship yard.

CHAPTER IX.

MINERALOGICAL POSITION.

It is without doubt to her location in the bituminous coal basin of Pennsylvania, that Pittsburgh owes her position as a manufacturing city. Located in the northwestern section of the great "Allegheny or Appalachian Coal field," frequently known as the great central bituminous coal seam, Pittsburgh has given to that portion of the coal measures from which her wants and those of the West are supplied, her own name.

Rodgers and Trego state that the seam known as the "Great Pittsburgh Seam," is the most extensively accessible one in the western coal measures.

The "Great Seam," as it is called in most geological works, or as it is more definitely known, "The Great Pittsburgh Seam," is finely exposed at Pittsburgh, and along the Ohio and Allegheny rivers; also extending nearly the whole length of the Monongahela river. This seam has been traced through Pennsylvania into Virginia, and also into Ohio, and is from twelve to fourteen feet thick at the southwestern border, from six to eight feet at Pittsburgh, and about five feet still further westward in Ohio.

Of this seam, Mr. Lyell, the eminent English geologist, says in his travels in North America: "I was truly astonished now that I had entered the hydrographical basin of the Ohio, at beholding the richness of the seams of coal which appeared everywhere on the flanks of the hills and at the bottoms of the valleys, and *which are accessible in a degree I never witnessed elsewhere. The time has not yet arrived when the full value of this inexhaustible supply of cheap fuel can be appreciated.* * * To properly estimate the natural advantages of such a region, we must reflect how the three great navigable rivers, such as the Monongahela, Allegheny and Ohio, intersect it, and lay open on their banks the level seams of coal. I found at Brownsville a bed ten feet thick, of good bituminous coal, commonly called the Pittsburgh seam, breaking out in the river's cliffs, near the water edge."

Of the capacity of the bituminous region for mining, Trego says: "In the bituminous coal fields there appear to be not less than ten separate layers or beds of coal of sufficient capacity for mining, and which vary in thickness from three to ten feet." R. C. Taylor, in his coal statistics, says: "It is possible that within the entire series, from the conglomerate upwards, ten such seams may exist; but we have not seen a position where more than half that number could be approached."

Toward the north and northeastern side of the coal range, the seams range from three to four feet. Near Karthaus eight coal seams have been traced, three only are workable, the largest being six feet.

At Blossburg and around the head of Tioga river, from three to six seams occur, but not more than two have been mined, and the coals are sent by railroad to New York State.

There are commonly four coal seams existing within the formation in the northeast extremity of the field, and it is but seldom that more than two workable beds occur in the same locality.

At Pittsburgh the main bed of workable coal is six feet, and increases in thickness as it proceeds up the river to Brownsville, where, as mentioned before, it is estimated by Lyell at ten feet.

Extensive as is the field of bituminous coal in Pennsylvania, thus scantily dotted out in these remarks; and incalculably valuable as it is to Pittsburgh as a manufacturing city, not less valuable to her is the anthracite deposit of coal, when viewed in connection with the consumption of iron by her manufactories.

The bituminous coal field lies principally west of the Allegheny Mountains, and extends from Towanda on the northeast, to the southwest angle of the State, a distance of two hundred and fifty miles.

The coal fields of Tennessee, Kentucky, Ohio and Virginia, by reason of the natural avenues of transportation and trade, stand in a supporting relation to the coal measures of Western Pennsylvania.

The area of the Tennessee coal field is 45,000 square miles; of Ohio, 44,000, and of Kentucky, 40,500. A certain portion of these in each are iron producing regions at the present time, and will no doubt become yet more productive.

In Ohio, although the statistics of McCullough give that State an area of 40,000 square miles, Prof. W. W. Mather estimates the area undoubtedly underlaid by coal at but 12,000 square miles, of which only 5,000 contain workable veins. "The Ohio coal," says R. C. Taylor, "makes good coke, and mixed with charcoal in the production of iron, creates an increased make, equal, it is affirmed, to 33 per cent."

The Kentucky field, according to Prof. Mather's Geological Report of 1838, has an area of workable coal veins of 7,000 square miles. There are in that area several qualities of coal. The main, or Pittsburgh seam, which extends from Pittsburgh through Virginia, reaches Sandy at the boundary of the State, but does not extend into it. Taylor says that nearly all the coal brought into use in Kentucky is of the description called Cannel.

The Tennessee division of the Allegheny range occupies an area of 43,000 square miles, the greater part of which consists of the elevated local group known as the Cumberland Mountains. The quality of the coal is spoken of as excellent. An analysis of it shows that it approaches in character the semi-bituminous variety of Pennsylvania.

These three States, from reason of their production of iron—a portion of which comes to Pittsburgh for a market—must always in their mineral productions be important auxiliaries to the manufactures of Pittsburgh.

Not less to the iron deposits which surround this locality, than to her coal, is Pittsburgh indebted for her past, and dependent for her future. Cheapness of fuel, in the larger proportion of cases, justifies a transportation of mineral to the locality of the fuel; but where the transportation of mineral is necessary but for short distances, and by easy artificial and available natural channels, the combination of cheapness of fuel, with great supplies of mineral immediately at hand, constitutes the locality which must become and always be, a great manufacturing centre. These two requisites Pittsburgh has, and in the importance of fuel as a requisite for manufacturing, she has of late acquired a new power.

Within the last twelve years petroleum has been largely added to the mineral products and advantages by which Pittsburgh is surrounded, and with it large veins of natural gas have been struck, whose future value is yet undetermined in the manufacturing progress of Pittsburgh and its vicinity. The volume of this gas is immense, and its power in enabling cheap manufacturing will be great. Found in Venango, Butler and Armstrong counties in great abundance, there is every indication that it will also be obtained in Allegheny county, and in the very heart of the city itself, in abundance. It has already been brought from Butler county to the iron mills of Pittsburgh, by means of pipes. While much yet remains to be done in conveying it from the gas wells of those counties in the most reliable manner, yet sufficient results have been obtained to show that, much as Pittsburgh owes to her central position in the bituminous coal fields, it is quite possible she will be more indebted to this immense provision of gas for supremacy as a manufacturing city. If, as indications give every reason to believe, this gas should be obtained from the very ground upon which the factories of Pittsburgh stand, there will be at her command a fuel which, surpassing even her coal for quality in its application to the reduction and manufactures of metal, will be of almost inconceivable cheapness. Shooting up of its own force from the depths of the earth, and needing but to be distributed in pipes to the furnaces and forges, or such fires as are needed for manufacturing purposes, or for the creation of steam, it will be seen the cost of such fuel will be very small.

Having briefly sketched the fuel fields surrounding the locality of Pittsburgh, we spare a few paragraphs to an equally brief description of the ore field from which she has drawn, and is to draw, her supplies of iron.

Throughout the counties embraced in the bituminous coal region, are to be found extensive beds of iron ore, and equally large deposits in the counties east of and lying along the bases of the Allegheny Mountains. The Allegheny river affords a cheap channel for the supply of iron from the counties lying upon that river, and the Monongahela river and Pittsburgh & Connellsville Railroad for the iron from the neighborhood of the Youghiogheny and Cheat rivers. The Pennsylvania Central Railroad for the metal of the interior and mountain counties.

The quality and quantity of the Allegheny river and Central Pennsylvania iron is so fully known as to need no exposition. It is sufficient that the fullest access to them is had. The irons of the celebrated Juniata region are, as it were, at Pittsburgh's door, while to the west of her those of Eastern Ohio are equally available. The rich ores of Virginia will, on the completion of the Pittsburgh, Virginia & Charleston Railroad, be as fully beneath her hand. The ores of Lake Superior or the iron of the furnaces of those regions, are cheaply transported by water carriage, with but about one hundred and fifty miles of rail carriage, while the irons of Missouri are reached by the cheapest of carrying agents, through the Ohio river.

The furnaces of Kentucky, Tennessee, and the central river counties of Ohio, also send their metal here for sale. It will be noticed that in iron, as in coal, Pittsburgh is centrally situated to the products of four States, and that she is in her own State immediately surrounded by vast deposits of that mineral, while to those of two other States, Michigan and Missouri, she is, by reason of facility of cheap transportation, brought almost into as central a position.

What has been the natural effect of such a mineralogical position upon the past of Pittsburgh, and what will be its effect upon her future, it is hardly necessary to inquire. The results are seen in her past progress and her future indicated by that past.

Important as may have been her position at the head waters of the Ohio, and as a supplier of merchandise to the country along the waters of the Allegheny, Monongahela, and a portion of the Ohio, and of the counties situated along the western basis of the Allegheny Mountains, before the age of railroads, and prominent as may have been that position under the circumstances then existing; yet it is apparent that, to her manufactures, she is indebted for the importance which has enabled her not only to hold her position as an important market for the last fifty years, but also to increase in a wonderful ratio.

The two substances, coal and iron, are always, when rendered available, the basis of great and permanent commercial and manufacturing wealth. Spreading a map of the nations of the earth before us, we at once perceive that those in which exist extensive deposits of these two, at first glance unattractive substances, are among the wealthiest, as well as most powerful nations of the world, and that upon and around these formations the most flourishing populations are concentrated. "Coal," says Vischers, "is now the indispensable aliment of industry. * * It is to industry what oxygen is to the lungs—water to the plant—nourishment to the animal." Says Elett: "This is essentially the age of commerce and of steam, the foundations of which are our coal mines. In the machine shop and factory, on the railroad and canal, on the rivers and ocean, it is *steam* that is henceforth to perform labor, overcome resistance and vanquish space. There was no appreciable iron trade anterior to the introduction of the steam engine, an instrument of power deriving its efficiency almost entirely from *coal*."

The connection of the past of Pittsburgh with the coal deposits of Pennsylvania, so rich and so easily mined, is too plain to need comment. Coal has been the life of the steam engine, and the steam engine has been the great power which has called into existence our manufactures. On the future of Pittsburgh as connected with her two minerals, we have no need to expatiate.

"The employment of the combustible mineral, COAL, in the smelting of iron, has emancipated the iron manufactory. Henceforth the mineral comes to seek the fuel.

"Coal is the most essential agent of industry. The foundry, the iron, constitute merely the instruments, the elements of riches."*

"The occurrence of iron ore associated with coal has been considered the most prolific source of commercial prosperity possessed by Great Britain. Her political economists have long been accustomed to ascribe the extent of her manufactories to the abundance and cheapness of both these substances, by which are furnished, not only fuel for working the steam engines which put in operation their machinery, but the material also for constructing the machinery."†

"Of all the physical circumstances which have contributed to our extraordinary progress in manufactures and industry, none have so much influence as our possession of valuable coal mines."‡

"Since the invention of the steam engine, coal has become of the highest importance as a moving power, and no nation, however favorably situated in other respects, not plentifully supplied with this mineral, need hope to rival those that are, in most branches of manufactures."*

"Our coal mines have conferred a thousand times more real advantages upon us than we have reaped from the conquest of the Mogul Empire, or than we should have reaped from the conquests of Mexico and Peru."‡

The remarks of the various writers we have quoted, are overwhelmingly forcible in their application to Pittsburgh. It needs no drawing of inferences to sustain how powerfully the past of other localities of coal and of iron foretell the future of Pittsburgh. To her fuel power of the past is now to be added that of the gas previously mentioned, which, in point of quality and in respect to cheapness, will even surpass the advantage of coal.

The coal areas of three of the various great manufacturing nations of Europe need only to be compared with that of Pittsburgh's immediate fuel field, to see the relative position she holds to those as a producing centre, and as a possible rival. Great Britain had, according to Taylor, but 11,859 square miles of coal, France but 1,719, and Belgium but 518, while Pennsylvania's coal area is given by various authorities at 15,000 square miles, or more than all those three great manufacturing nations combined; and of that 15,000 square miles, more than

* Bulletin de la Commission Centrale de Statistique Bruxelles, 1843.

† Ducatell's Report to Maryland Legislature, 1833.

‡ McCullough's Statistics of English Manufactures.

two-thirds are almost literally under the feet of Pittsburgh, at least at her very door, while the new element of natural gas is literally and truly under her feet in quantity and power. So far as enabling her to rival all competitors, this new fuel is equal to perhaps the whole force of even her great area of coal.

When these two substances, iron and fuel, as in the location of Pittsburgh, combine with natural and artificial advantages, of great availability and extent for the distribution of their products, as well as easy, cheap, and rapid means of concentration at the manufacturing point of the raw material, can it be a subject of hesitancy to decide upon the employment of capital in manufactures at this point? Says an authority we have already quoted, "Production, which outstrips all local necessities, urgently demands new outlets. Embarrassment no longer attaches to production; the trouble rests henceforth with distribution."†

Possessed of a river navigation of many thousands of miles, reaching thereby nearly 400 counties, with their millions of population: penetrating by these avenues into 15 States of the Union: commanding three distinct avenues of access by water to the ocean: the terminus of an extensive rail road system, spreading its iron net work over eight States, and reaching hundreds of inland cities and towns, otherwise unapproachable, excepting by the stage coach and road wagons: Pittsburgh laughs at the last sentence of our quotation, "The trouble rests henceforth with the distribution."

Proof, in her past, of the quotation from the same authority, that "henceforth the mineral comes to seek the fuel:" Sustained in her expectancies of the future by the experiences of the past of the cities and towns of other nations having coal formations; triumphant in her geographical position over the troubles of distribution; what city, what locality, offers such bright features for examination by the capitalist, the merchant, the mechanic, the laborer? What point presents greater inducements to labor, to skill, to ability and to capital?

† Commission Centrale de Statistique, Bruxelles, 1848.

CHAPTER X.

MANUFACTURING ADVANTAGES.

By reference to the chapter of this volume treating of the geographical position of Pittsburgh, it will be observed that, in the very important requisite of natural and cheap channels for the distribution of productions, Pittsburgh is possessed of remarkable advantages. A similar reference to the exhibition of the Pittsburgh railway system will show, that in her artificial avenues for distribution, there is an equal superiority of position. By that reference it will be observed that through her river channels, she reaches from her own site, an extent of country embracing more than 1,000 000 square miles, over which she has unlimited powers for distributing her manufactures to the populous cities, growing towns, and thriving villages, which are profusely located throughout it; and that by her rail road system, she possesses almost equal facilities for distribution.

This power of distribution is in itself an advantage of great weight, without which the ability to produce copiously and cheaply would be of less worth. It stands in the same relation that ability to send his crops readily to the best market does with the agriculturist. It would matter not how bountifully the earth might yield of its grains and fruits, if the carriage to consumers was difficult slow and costly. The gains would be small, and the amount disposed of limited, while some more favorably situated section would obtain the trade. Not only is facility of distribution of much consideration, but centrality of location to the market to be supplied is of equal desirability. Transportation to a wide circumference is easy, when but half diameters are traversed to reach any point of the circle; thus greatly reducing transportation expenses in the aggregate carriage to a broad market. Pittsburgh not only possesses that centrality of position, but combines it with such remarkably comprehensive lines of transportation, that probably no city is possessed of equal advantages. This an examination of her geographical position and her railway system, shows. A broad market is a great basis to the encouragement of manufactures; and where the possession of such a market is accompanied by easy reach to all its points, through but comparative short distances of carriage, an advantage of great value is held.

After the power of distribution, the next point which attracts the attention of the observant person, is the position which Pittsburgh occupies for the easy reception of the staple materials of the country. By the Pennsylvania Central Rail Road, the Pittsburgh & Erie Rail Road, the Pittsburgh & Connellsville Rail

Road, the Allegheny Valley Railroad, and the Allegheny and Monongahela rivers, Pittsburgh penetrates into the entire iron regions of Pennsylvania, in every direction. When it is considered that there are but eight counties out of the sixty-two in the State that are incapable of the production of iron, the body of iron, and the variety of ores, and the consequent character of the metal, which, as it were, immediately surrounds Pittsburgh, is apparent. To this vast amount of material, Pittsburgh has full access; and as already specified, great facilities for the transportation of the mineral from the furnaces to her rolling mills and foundries, or of the raw ores from their deposits to her own furnaces. In addition to the Pennsylvania ore deposits, which are just beginning to be developed, she has equal facilities for receiving the products of the eastern Ohio iron furnaces, by transportation over the Pittsburgh, Fort Wayne and Chicago, the Pittsburgh and Cleveland, the Pittsburgh, Cincinnati and St. Louis Railway, and the Ohio river. The Ohio river gives also cheap facilities for receiving the products of the Tennessee and Kentucky furnaces, and the ores and metals of Missouri. While the lakes, with their cheap water carriage, and the short portage of the Cleveland & Pittsburgh Railroad, give equal advantages for obtaining the metals of Lake Superior.

The Allegheny river and the Allegheny Valley railroad, penetrating one of the finest wooded districts in the country, give to Pittsburgh enviable facilities for cheap transportation from that district of such timber as the various manufactures in wood which have and may arise demand. The Monongahela river, now, and the Pittsburgh, Virginia and Charleston railroad, more fully in the future, will give facilities for obtaining the fine timber of Western Virginia; and this latter road access likewise to the rich and desirable ores of that section. For foreign wood the Pennsylvania Central railroad, connecting with the eastern seaboard, and the Chesapeake and Ohio canal, connecting, by the Pittsburgh and Connellsville railroad to this city, with the south-eastern sea-coast, afford cheap a transportation of such quantities as may be required. For wool, hemp, cotton, and in fact any of the staples of the various sections of the Union, the exhibit which is already given of our rivers and our railways shows how readily they can be laid down in Pittsburgh, and how cheaply.

In the reception of material the same advantage of centrality of position obtains as in the distribution of it in its manufactured forms, producing, in the combination of lessened expense, of reception in crude forms, and of re-distribution in finished shapes, a great general advantage not to be too highly valued, and one at all times powerful in holding position against competition.

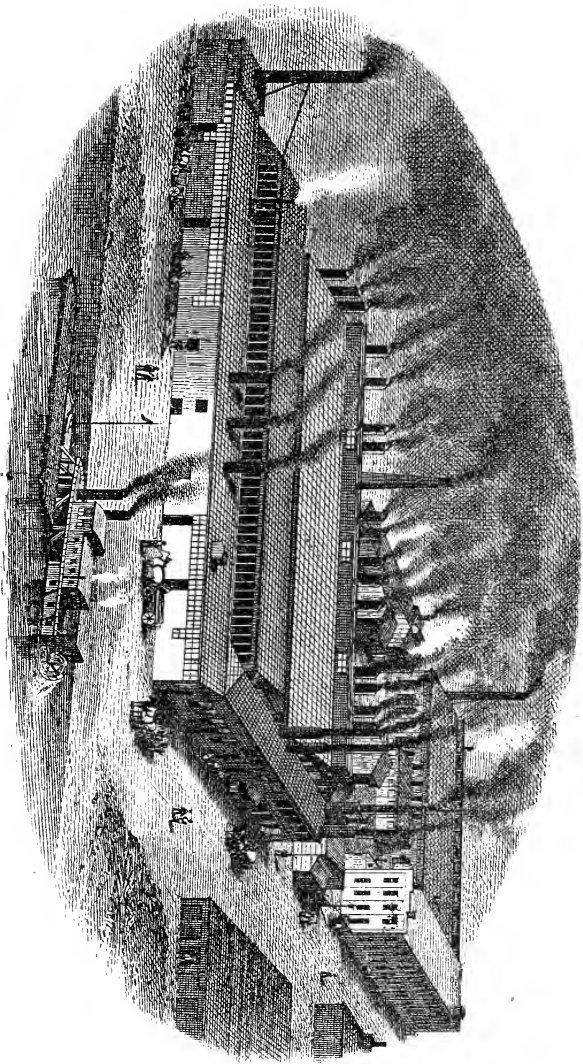
After the facilities for the distribution of productions and the reception of material, the next important quality in creating and continuing a great manufacturing city is fuel.

There is no point combining, as Pittsburgh does, the two first necessary advantages, that possesses the last in so valuable a shape. Other cities may obtain coal of a good quality and in quantities; yet the advantage remains with Pitts-

burgh, from the easy access which is had to it, and the consequent cheapness of the article. To manufacture in Pittsburgh there need be, from the location of the coal strata and the advantageous sites for factories at this point, little or no cost for the transportation of fuel. The coal lies in the hills from one to two hundred feet above the bottom lands, on which the factories being located the coal can be sent down by cars directly into the yards thereof. On the left bank of the Monongahela, and within the city limits, the coal lies 200 feet above the level of the river bank, and is in a number of instances sent down into the mills and foundries in the manner described, in which cases the cost of fuel is only about eighty cents per ton of 2,000 pounds. Where from any cause the factory is located in such a manner that advantage cannot be taken of these unparalleled facilities for fuel, the cost of coal delivered in the yards of the mills, foundries, &c., is only from \$1.31 to \$1.50 per ton; and contracts have been made at \$1.16 and \$1.20. There is a large extent of ground suitable for all descriptions of manufactories, where, as previously stated, coal can be sent down into the yards at a cost not above \$1.00 per ton of twenty-five bushels, and down to eighty cents. In any article which requires for its manufacture large quantities of fuel, the great advantage gained by this easy obtainance of fuel, and the almost nominal cost per bushel or ton, is decisive as to the advantage of the location.

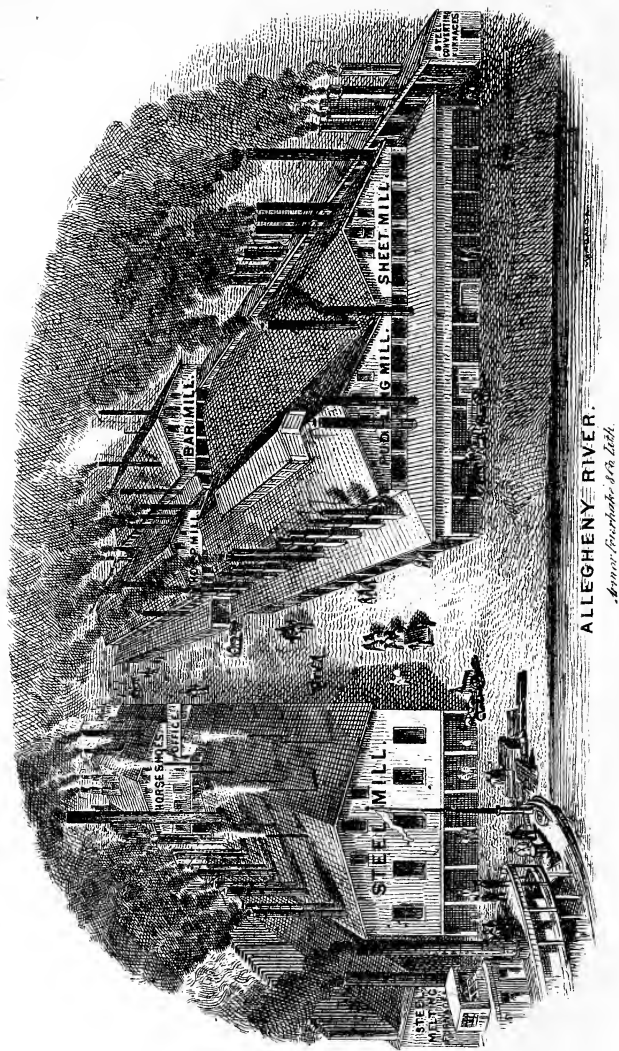
All this advantage of coal fuel Pittsburgh has possessed in the years that have passed, and still maintains. Of late years a new substance has literally arisen, which seems destined to place Pittsburgh beyond the power of competition, so far as fuel is the controlling power, which it is where great quantities are requisite in the manufacture of articles.

This new substance is the natural gas that has been found in the petroleum regions of Pennsylvania. The immense quantities of this substance that rushes up through the holes or wells that have been sunk, is almost beyond comprehension. It is presumed to be inexhaustable. Similar escapes of a like gas in Asiatic Europe, on the borders of the Caspian Sea, are known to have continued for hundreds of years, without apparent diminution. For the manufacture of metals, this gas, by reason of its purity of flame, strength of heat, and absence of sulphur or other deleterious ingredients, is without a peer. Some of the largest veins that have been struck, are within a comparatively short distance of Pittsburgh, and pipes from one of these wells has been laid a distance of some seventeen miles, to the iron works of Spang, Chalfant & Co., the Isabella Furnace and the iron mills of Graff, Bennett & Co., in all three of which the gas is used as a fuel in the place of coal. At the iron works of Rodgers & Burchfield, a gas well within a quarter of a mile of the mill, was utilized a year or more ago, and its success fully demonstrated. But upon that point there is no question. The quality of iron made by it is greatly superior to that treated with coal. Increased quality combined with decreased cost of fuel, is the result where this new fuel is used. Such a combination creates a manufacturing advantage that seems to set at defiance any competition, and opens to Pittsburgh, in



Otto Krebs Lith. Pittsburgh

VIEW FOOT OF NINETEENTH STREET, SOUTH SIDE.
CHESS, SMYTH & CO.'S NAIL WORKS.



VIEW FROM ALLEGHENY RIVER, FOOT OF THIRTY-SECOND STREET.
REESE, GRAFF & WOODS' IRON AND STEEL WORKS.

the contest of the United States for foreign markets, just now begun, a wonderful advantage in the production of articles where cost of fuel and superiority of quality by use of superior heats, enters into the cheap production and its consequent ability to control markets. The probability that exists from many indications that this supply of natural gas is not merely in the counties of Western Pennsylvania, where petroleum is obtained, but is under the very surface on which the manufactories of Pittsburgh stand, is a still further advantage, as it will not need to be brought from a distance in pipes, but procured at the immediate side of the fires it is to supply. Rushing up from the depths of the earth by its own force, the cost of fuel, when once the well is sunk, is nothing.

This advantage of fuel, without the ability to distribute widely and cheaply, and to receive raw materials from a distance easily and cheaply, would of course be in itself, isolated from the other two, of little or no value; nor would they without the other, be of the same force or value; but such a combination of these three, as exists at Pittsburgh is, beyond disputation, unsurpassed—perhaps unparalleled.

Coal is being found in many localities, where twenty years ago it was not supposed to exist, and methods of treating it so that its impurities will have less effect upon the metals and ores, subjected to its flames, have been devised; but in that there is additional expense which still increases the cost of fuel, while in no case has the same facility for obtaining the fuel been realized. The natural gas may perhaps be obtained in other sections; but where there are indications that such may be the case, the other combinations of material, especially in irons and distribution facilities do not exist. With the growth of the country competition must naturally arise, but a great manufacturing community is not born in a day. It has taken Pittsburgh over fifty years to attain her proportions, and gather around her the facilities of skilled workmen, experience, reputation, and varied factories, whose facilities are each a support to the other. The ease with which the government, in the late war, was able to have furnished without delay, at Pittsburgh, a great variety of munitions of war; to build armed and iron plated ships; to obtain cannon, and have them rifled; to have shot and shell cast, ambulances, gun carriages and army wagons built; all without the loss of time in the construction by it of a workshop or machinery for the manufacture of those articles, shows forcibly what power, facility and ability there is in a long established manufacturing community.

This is another advantage that Pittsburgh possesses which needs no dilating upon, and must in all competitions give her superiority. Possessed of great natural advantages, she has strengthened these by fifty years of accumulation of those artificial advantages of varied machinery, masses of skilled workmen, and diverse kind of manufactories, which like the various corps of a well ordered army, support one another and give power and endurance to the whole.

In all competitions with fresh competitors, Pittsburgh stands in the relation that a well constructed, well organized, well located, well equipped manufactory,

with ample capital and great facilities, surrounded by a population of skilled workmen, does to one less favorably located, with inferior facilities, freshly established, wanting experience, and deficient in mechanical knowledge and skill to draft from. With Pittsburgh it is not the ability in any competitions that may arise to maintain her past superiority, it is simply the will so to do. The power she has, and competition will only bring out the will to maintain her own, under which competition will benefit rather than impair.

Returning from this illustration of the advantage of long established facilities and years of acquired skill, a few more sentences may well be given to the presentation of the advantage of coal fuel, that being so primarily the germ of manufacturing greatness.

The quality of the coal of the Pittsburgh seam is so well understood by all manufacturers, that descriptions of its adaptations would be almost superfluous. The following table, however, presenting a few results from various analyses which have been made, is given in order that a comparison can more readily be instituted as to Pittsburgh and other western cities, in the one item of manufacturing—fuel.

	Carbon.	Volatile matter.	Ashes.	Pounds of Steam at 212° per cubic feet.	Specific gravity.	Weight of cubic yard, pounds.
PENNSYLVANIA.						
Pittsburgh, . . .	60.14	36.46	3.40	384.1	1,265	2,134
Somerset Co.,* . .	69.73	19.50	10.68	410.9	1,382	2,332
Mercer Co., . . .	57.80	40.50	1.70	370.0	1,275	
Venango Co., . . .	49.80	43.20	7.00	350.0		
Beaver Co., . . .	30.12	36.00	38.88	195.0		
VIRGINIA.						
Wheeling, . . .	52.03	44.04	3.93	362.0	1,230	2,075
Kanawha Salines, .	51.60	47.10	2.30	332.0	1,250	2,109
KENTUCKY.						
Breckenridge,† . .	27.16	64.29	8.47			
Henderson, . . .	54.29	42.56	3.15			
Hawsville,† . . .	47.00	46.00	7.00	299.0	1,250	2,106
Caseyville, . . .	44.49	31.82	23.69	286.0	1,392	2,347
Bell's Seam, . . .	60.14	36.46	3.40	384.0		
OHIO.						
Pomeroy,	47.72	39.29	12.90	305.0	1,357	2,313
INDIANA.						
Cannelton,† . . .	59.47	36.59	3.49	348.8		
Rockport,	45.00			292.0		
MISSOURI.						
Calloway,‡ . . .	40.83	40.05	13.12			

* This Coal comes into the Pittsburgh market via the Pittsburgh and Connellsville Railroad, which passes through the county.

† Cannel Coal.

‡ Above St. Louis, and Cannel Coal.

The value of coal as a fuel, or as a generator of steam, depends very essentially upon the quantity of fixed carbon which it contains. As a general rule in the manufacture of iron, the quantity of coal is necessarily augmented in the same ratio that the yield of carbon is diminished. The same is the case where the manufacture of glass is concerned, and, in fact, wherever heat is a requisite in manufacturing.

Following those great essentials, reception of material, distribution of products and cheapness of fuel, comes cheapness and eligibility of sites for manufactories.

In Pittsburgh locations for building, combining the requisites of space, water, transportation facilities, and the best of those advantages already mentioned for obtaining fuel, are to be had in every direction around the two cities and the suburbs, at very reasonable prices and on accommodating terms.

On both sides of the Allegheny river run railroads, also on both sides of the Monongahela. Between the two runs the Pennsylvania railroad, while the Pittsburgh, Ft. Wayne & Chicago railway passes through nearly the entire length of Allegheny city. Along all these lines sites for factories are abundant, where facilities for the receiving of fuel and materials into the very mills and other workshops direct from the cars exists. Into many of those which are now constructed along these lines, side tracks run directly into the factory yards. Along the Monongahela or Allegheny shipment, direct from the factories, by either water or rail, is practical and daily practiced. This facility has so much increased in the past ten years as to have caused almost a total abandonment of maintaining large warehouses by manufacturers, nearly all shipments being made from the factories, effecting a large saving in rents, which is not without its power in holding trade under close competitions.

In intimate connexion with the advantages belonging to Pittsburgh is the salubrity of the location. The tables of mortality treating upon this are conclusive of the superiority on this point of this community; and, without doubt, the great health possessed by this manufacturing population weighs heavily in the summing up of the advantages of this location as a manufacturing point. Not only to the workman is the health of his family and of himself of importance, but to the manufacturer as well. The loss of income by three or four weeks sickness suffered by a workman, or by the increased demands upon his earnings from frequent illness in his family, is seriously felt in the consequent deprivation of comforts, which the money lost from lost time, and necessarily expended in drugs and doctors' bills, would purchase. The lessening of such misfortunes is an object in the selection of his place of toil. To the manufacturer, whose profits often depend upon the skilled and unbroken labor of a set of hands, the loss from the forced substitution of green hands for competent ones, or the ragged running of his machinery from the forced depletion of his working force by illness, is also, especially if occurring when his order books are full, a great injury, not only to his profits, but to the smooth working of his business.

To the employer, therefore, as well as the employee, is the healthfulness of a location a subject of careful consideration; and there is no point, as statistics show, in the United States, possessed of all or any of the requisites for supporting a manufacturing community, which can in any way compare with Pittsburgh, for salubrity.

The cheapness with which workmen can live is another point in manufacturing advantages. In this respect Pittsburgh compares favorably with other cities; a majority of the articles of food are low in prices, and articles of clothing as cheap as in any of the large Eastern cities. In fuel the cost is not more than half as in either Eastern or Western manufacturing communities; while rents are much less than in other large cities.

From this brief sketch of some of the manufacturing advantages of Pittsburgh, it is apparent that there are three advantages of cheapness—those of fuel, material and living; three of position—those of reception, distribution, and manufacturing sites; three of health—unbroken labor, lessened expenses, and increased income.

The cost of manufacturing, from these advantages and many others of a minor character, is so lessened in Pittsburgh, that it may safely be called the cheapest point of the United States for the manufacturing of most articles, especially those in which iron, wood, cotton, wool and fuel are important components.

A writer in "Rees' Encyclopedia," at an early date, in mentioning the advantages of this location, says—"The cotton of the Ohio and Mississippi, the hemp of Kentucky, the ore of the vast iron district, near Pittsburgh, the abundance of material for glass, will undoubtedly lead the people of that place to rival Manchester in cotton goods, Birmingham in iron, Russia in hemp, and Germany in glass."

Among the powers used in manufacturing, that of steam is preeminent, and its advantage being in proportion to its cost, its value is great or small over other kinds of power according to its cheapness. At Pittsburgh so cheap is the article of fuel, that steam becomes the prevalent power.

The cost of material for the erection of the various species of manufactures is so low at this point, that a desirable advantage is gained here from the reduced cost of building. All such component parts of manufactories, as wood, brick, glass and iron, are cheap, and labor is reasonable, in fact low in comparison with some other points.

Lumber is worth from \$18 to \$20 per thousand feet; shingles, \$3 per thousand; glass, 12 by 20, sixty lights to the 100 feet, \$6.50 per 1000 feet; bricks, \$6 per thousand; castings are worth from \$50 to \$60 per ton; forged iron work about \$100 per ton; lime 18 cents per bushel; white lead, \$2.75 per keg of 25 lbs.; planed flooring, \$25 per thousand; sash averages 6 cents a light; doors, \$3 each; tin, $\frac{1}{2}$ X \$12 per box; sheet copper, 32 cents per lb.; brass castings, 25 cts. per lb.; bar iron, \$46 per ton; sheet iron, \$80 per ton; nails, \$3 to \$5 a keg of 100

lbs.; spikes, \$3½ to \$5½ a keg of 100 lbs.; slating, with copper nails, \$10 to \$11 per square of ten feet.

The chapter treating of mechanics' wages furnishes data for estimates of the expense for mechanical and manual labor in erecting buildings in this vicinity, and the capitalist or manufacturer can from those and the data already given, at once discern the extent of the advantage gained in Pittsburgh by facilities and cheapness for erection of building.

There are in Pittsburgh abundant openings for manufacturing enterprises, which will not fail to be highly remunerative if properly conducted. There is business and demand for more manufactories—in iron, glass, wood, cotton, wool, and in fact every staple of the country; and for the capitalist and mechanic, there is no point in the Union where skill and money can be more profitably employed than at Pittsburgh.

Especially are there openings for the establishment of factories in which the leading staples can be transmuted into the various forms for the daily use of life. The iron, the steel, the copper, and the glass of Pittsburgh is sent to many sections of the United States, to be re-manufactured into scores of articles, which would be cheaper made on the spot where the staples themselves are produced.

In this respect there is much room for the establishment of manufactories at Pittsburgh. To the capitalist desirous of investing money, the mechanic of employing skill, and the merchant of exerting ability, a closer and personal examination into the subjects treated of in this volume will be undoubtedly advantageous.

CHAPTER XI.

LUMBER AND ITS PRODUCTS.

The incident which it is just to consider as the commencement of that valuable portion of the business of Pittsburgh, the lumber trade, is thus recorded in "Craig's History of Pittsburgh:"

"Major Thomas Butler, then commanding (1795) at Franklin, had informed Major Craig that the very worthy and excellent Seneca Chief, Cornplanter, or Gyantawachia, as his name was spelled in signing the treaty, had at his saw-mill a large quantity of boards—an article much wanted for the service of the public. The Major therefore immediately dispatched Marcus Hulings, an experienced waterman, with three bags of money and some other articles, up the river to his place, to purchase all the lumber. Hearing the next day that some private persons had gone on the same errand, the Major dispatched James Beard, a trusty person, on horseback, with a letter informing Cornplanter of Hulings' object. Beard arrived in time and secured the lumber. The following is the reply of Cornplanter given *verbatim et literatim*:

"GENESADEGO, 3d December, 1795.

"I thank the States for making me such kind offers. We have made peace with the United States as long as water runs, which was the reason that I built a mill in order to support my family by it. More so because I am getting old and not able to hunt. I also thank the States for the pleasure I now feel in meeting them again in friendship. You have sent a man to make a bargain with me for a certain time which I do not like to do. But as long as my mill makes boards the United States shall always have them in preference to any other, at the market price, and when you want no more boards I cannot make blankets of them. As for the money you sent if I have not boards to the amount leave it and I will pay it in boards in the spring."

The rest of the chief's letter as not apposite to this subject, is omitted.

In 1807 there were in Pittsburgh four lumber yards.

In 1812 the quantity of lumber brought down the Allegheny river and inspected at Pittsburgh, was 7,000,000 feet—worth about \$70,000.

In 1817 we find the following record in Cramer's Almanack, of the timber trade of the Allegheny river.

"On Brokenstraw creek, Warren county, Pennsylvania, are fifteen saw mills, some of which use eleven saws. They cut on an average 3,000 feet of boards a day, and can be worked eight months in the year, making about 9,450,000 feet

annually, worth in Pittsburgh, \$100,000. On the Conewango, which rises in the State of New York, and empties into the Allegheny river above Brokenstraw, in the same county, our informant assures us that more than twice that quantity of lumber is sawed."

This account would make the lumber business of the Allegheny river then, and consequently of Pittsburgh, as at that period the product of all those mills was floated to this city, worth \$300,000, and the number of mills about forty-five, producing 28,350,000 feet of lumber.

In 1831 the amount annually brought down the Ohio is estimated in "Peck's Guide" at 30,000,000 feet, worth in the neighborhood of \$300,000.

The increased demand consequent upon the rapid progress of the population of the Ohio Valley and the manufactures of Pittsburgh, rapidly swelled the amount of lumber annually cut on the Allegheny and its tributaries, until the amount of lumber run from that section and sawed upon their banks, increased to an immense amount. About one-half of the entire "cut" of the mills was consumed at Pittsburgh; the remaining half is taken to ports below and sold.

Of late years the supply from that section has not increased, but the amount used in the city and manufacture has largely increased. The supply is augmented by receipts from the western counties of Pennsylvania, through which runs the Pennsylvania Railroad, also from the Lakes.

There are, in the two cities, the following saw mills and lumber yards,—the two being grouped together by reason of difficulty of separating their statistics:

Style of Firm.	Location.	Established by.	Date.
Ed. Alcott.	Fiftieth st.	Ed. Alcott.	1873
Geo. Dithridge & Co. .		Geo. Dithridge & Co.	1873
S. & W. H. Martin. . .	258 Fifth av.	S. & W. H. Martin. . .	1865
Edward Bindley. . . .	274 Fifth av.	Jno. C. Bindley. . . .	1832
Robt. Fair.	Penn & Hiland avs, ee	Robt. Fair.	1876
Mellon Bros.	Station st., e e . . .	Mellon Bros.	1865
McCullough & Smith. .	226 Penn av.	McCullough & Smith,	1869
Jas. Gillespie.	21st and Railroad sts.	Gillespie & Mitchell, .	1859
McQuewan & Douglass	57 Penn st.	McQuewan & Douglass	1832
Wm. Dilworth, Jr. . .	7th av. and Grant st.	Thos. Scott.	1856
R. M. Leonard.	173 Penn st.	Dennis Leonard. . . .	1821
Willis Boothe.	43d and Railroad sts.	Willis Boothe.	1841
G. A. Mundorf,	23d and Mary sts., s s		
Richey, Smith & Co. .	Corry & Killbuck sts.	Richey & Finkbine. . .	1866
D. L. Patterson. . . .	74 Beaver av.	Simpson & Patterson.	1836
Phillips & Mittenzwey.	19th and River, s s .	Phillips & Mittenzwey.	1858
W. S. Tupy.	11 Darrah st.	W. S. Tupy.	1874
L. F. Martin.	109 Lacock st. . . .	L. F. Martin.	1873
Euwer Bros.	Craig & Killbuck sts.	D. Euwer & Son. . . .	1850
B. F. Rynd.	74 Irwin av.	B. F. Rynd.	1874

Style of Firm.	Location.	Established by	Date.
McKirdy & McGinness.	180 Sandusky st. .	McKirdy & McGinness	1860
John Naulz.	69 Third st.	John Naulz.	1866
Jas. McBrier.	191 Sandusky st. .	Wm. McBrier.	1835
McBrier, Dean & Co. .	Herr's Island.	A. H. Harvey & Co. .	1850
Kopp & Voegtley. . .	Main & Sycamore sts.	Painter & Warren. .	1837
Rudolph & Zchudy. .	Ohio st. & Church ay.	Rudolph & Zchudy. .	1866
L. Estein.	369 Ohio st.	L. Estein.	1872
F. Becker.	100 East st.	F. Becker.	1863
C. C. Boyle & Co. . .	Sanduskyst & River av	Brewster & Watson. .	1840
Leonard, Walter & Son.	115 River av.	Leonard, Walter & Son	1866
Geo. Kim & Co. . . .	Carson st.	Geo. Kim & Co. . . .	1861
J. G. Fleishman. . .	26th and Water sts. .	Young & Fleishman .	1862
Alex. McClure & Co. .	27th and Railroad sts	McClintock & Co. . .	1840

These thirty-four firms employ 291 men, whose wages amount to \$145,635. They use 55 horses and 43 wagons, and piles and saw over 55,000,000 feet of lumber, principally pine and hemlock; also about 15,000,000 lathes and 13,000,000 shingles. The value of this at the rates of the past year, is in the neighborhood of \$1,370,000. The area of ground occupied is equal to sixty-three acres.

There are also thirty-eight establishments in which flooring boards, window frames, sash and door, and packing boxes are manufactured. The following table shows their location, date of establishment, etc., of these

PLANING MILLS, SASH AND DOOR AND BOX FACTORIES.

Style of Firm.	Location.	Established by.	Date
Alex. Patterson. . .	123 Preble av. . .	A. Patterson.	1866
Mullen, Steen & Co. .	66 Lacock st.	Mullen, Steen & Co. .	1872
Jas. Stedeford & Co. .	106 North av.	Lamb & Son.	
Trimble & Co.	245 Beaver av. . . .	Gillian, Trimble & Co.	1861
Alex. Campbell. . . .	Manchester.	Alex. Campbell. . . .	1870
Jno. B. Ingham & Son.	417 Rebecca st. . . .	J. B. Ingham.	1848
J. C. Patterson & Co. .	217 Lacock st.	J. & A. Patterson. .	1835
Barker & Burton. . . .	44 Anderson st. . . .	Reed & McCombs. . .	1844
Charles & Co.	288 North av.	Charles & Co.	1846
M. Simon.	Anderson & Robinson	Thompson & Phillips.	1862
Grusch, Remming- } snyder & Co. . . }	75 Third st., Allegheny.	Grusch, Remming- } snyder & Co. . . }	1867
Chambers, Vandevort & Co	Pennsylvania av. . .	Cochran Bros.	1846
Geo. Noll.	Cherry and Main st.	Gregg & Dalzell. . .	1864
H. Omslaer	390 River av.	Jno. Morrison.	1846
Reed Bros.	323 River av.	Reed Bros.	1866
Murphy & Diebold. . .	36th ward, s s . . .	Burt, Baker & Bros. .	1870
Greene & Coyle. . . .	Walnut & Bridge, s s	Burt, Baker & Bros. .	1870

Style of Firm.	Location.	Established by	Date.
Paul, Cook & Co. . . .	46th and Hatfield sts	Paul, Miller & Co. . .	1870
McKimmon & Milligan.	872 Penn av. . . .	W. W. Rodgers & Co.	1862
Robt. Marshall. . . .	7th and Bedford avs.	Marshall & Kerr. . .	1863
Hill, Patterson & Co. .	Old av. and Boyd st.	Hill, Patterson & Co.	1866
W. F. Richardson. . . .	48 Water st. . . .	W. F. Richardson. . .	1858
A. Lewis.	Grant and 7th av. .	Hill & McClure. . . .	1854
Slack & Sholes. . . .	Third st. and Penn av.	Slack & Sholes. . . .	1864
J. W. Miller & Co. . . .	1st and Penn sts. .		1825
Heath & Speer.	3dst. & Duquesneway	Heath & Co.	1856
Wm. Dilworth, Jr. . . .	7th av. and Grant st.	Wm. Dilworth, Jr. . .	1875
Kelly & Evans.	Seventh av.	J. D. & A. Kelly. . . .	1868
B. Schmidt & Co.	31st and Penn. . . .	Pearson & Co.	1862
Geo. McKee.	33d and Penn. . . .	McKee & Douglass. . .	1865
Saml. Logan.	26th and Penn. . . .	Robt. Hill.	1857
James B. Hill.	953 Penn.	Jas. B. Hill.	1869
James H. Low.	953 Penn.	James H. Low.	1852
G. A. Mundorf.	23d and Mary sts. .		
South Side Plan'g Mill Co	20th and Mary sts. .	South Side P. M. Co. .	1871
Hahn, Harms & Co. . . .	17th and Jane sts. .	Hahn, Harms & Co. . .	1874
Union Planing Mill Co.	18th st. and Fox ay.	Union P. M. Co. . . .	1865
A. Hays & Co.	13th and Water. . .	Jas. Hays.	1856
South Pitts. Plan'g Mill Co	3d and Chestnut sts.	South Pitts. P. M. Co.	1871

These 38 firms employ 821 hands, whose wages amount to \$462,966. They use 99 horses and 97 wagons. They consume 14,400 pounds of glue, 418 reams sand paper, 19,400 bushels of coal, 7,499 kegs of nails; and use 62 planers, 39 mortising machines, 34 tenoning machines, 253 saws, 60 moulders, 9 flooring machines, 5 sand papering machines, 20 blind tappers, 20 shapers, 3 pannel raisers,—in all, 394 machines used in the production of doors, sashes and flooring. They use 52,500,606 feet of lumber; and their products amount to \$2,000,000. There is \$894,703 capital in the buildings and machinery of the 38 establishments, which occupy an area of 49 acres.

The statistics of the two foregoing branches of the lumber trade strictly, are assigned in their aggregates as nearly as possible to the branch to which they properly belong. In some cases the same firm carry on all the branches, and a further sub-division could not be arrived at, although it would perhaps be satisfactory to ascertain what were the statistics of each class of manufactures. It will be seen, however, that the direct lumber trade of the city is an important one; comprising 72 establishments, whose aggregate business is nearly three and a half millions of dollars, employing over eleven hundred men, and paying out over \$600,000 of wages, and occupying 112 acres of ground in their works.

CARRIAGE AND WAGON MANUFACTURING

Is another branch of Pittsburgh products that properly comes under the classification of Lumber. Of this branch there is

Style of Firm.	Location.	Established by	Date.
F. W. Sawert & Co. . .	Penn av. and Eleanor.	Sweeny, Skelton & Co.	1869
J. G. Wier & Bros. . .	Wash'gton & Poplar.	J. G. Wier.	1858
J. W. Moore & Co. . .	857 Liberty av. . . .	G. A. Glages.	1869
Wm. McCallen.	250 Fifth ave.	Wm. McCallen.	1874
H. Lange & Bro. . . .	77 Diamond st.	Jacob Maeier.	1862
Henry Schafer.	79 Diamond st.	Dickenbach & Myers.	1860
Chas. Blank.	1210 Bingham st. . . .	Chas. Blank.	1874
Jas. Miller.	11th & Washington.	Jas. Miller.	1866
Jno. Krebs.	Smallman st.	J. Krebs.	1869
Jacob Rush & Bro. . .	304 Fifth av.	Jacob Rush & Bro. . .	1876
J. Albert & Bro. . . .	Penn and Hiland av.	Christ. Albert.	1862
Sam'l Blanck.	Penn av, e e.	Sam'l Blanck.	1874
Wier & Shuman. . . .	68 Ridge avenue. . . .	A. Kirk.	1865
W. H. Cullers.	18 Fayette st.	W. H. Cullers,	1868
Pitts. Wagon Works. .	180 Beaver av.	Jno. Sampson.	1832
Gass & Walter.	401 Beaver av.	Gass & Walter,	1872
Frederick Bechner, . .	Park way.	F. Bechner,	1860
West & Vogler,	257 Robinson st. . . .	West & Vogler,	1871
F. & W. Beckert, . . .	340 Ohio st.	F. Beckert & Son. . . .	1868
R. W. Hare.	162 Penn av.	R. W. Hare.	1865
H. R. Davis.	147 Penn av.	Campbell & Stoner. . .	1865
L. Gleisencamp & Co.	75 Liberty st.	C. West.	1847
Sander, Lowden & Co.	6th & Duquesne way.	Sander & Boreland. . .	1864.
G. A. Schnabel.	31st and Penn av. . . .	M. Schnabel.	1861
D. Gum.	1146 Penn av.	D. Gum.	1871
C. West & Co.	Duquesne way & Evans ay.	C. West.	1847
C. Coleman & Son. . . .	near Suspe'n Bridge.	Coleman & Kirk.	1859
Knoch & Lang.	15 Sandusky st.	Knoch & Lang.	1869
Gabriel Manf'g Co. . .	Jane and 18th sts..	Dudenburg & Franze.	1864
A. Kruts.	45 Fourteenth.. . . .	A. Kruts.. . . .	1863

These 29 establishments employ 400 hands, whose wages are \$209,645. They consume \$183,220 feet of the various descriptions of lumber; they use \$12,000 worth of cloths, \$19,600 worth of springs and axles, \$12,750 worth of paints and varnishes, \$43,500 of iron, \$8,500 of leather; make and sell \$479,000 of wagons and carriages.

Of this class of manufactures there is but to say, that as fine carriages are produced as anywhere in the United States; and the fame of Pittsburgh built wagons belongs to the early history of California, the Mexican war, and the war

of the rebellion. In all these great episodes of the country's history, the wagon and carriage factories of Pittsburgh supplied largely the wants of the government and of the gold seekers. Baggage wagons, ambulances, artillery wagons, were all excellently made; and the skill of the mechanics of this branch of Pittsburgh manufactures is fully equal to repeat in the future what they have done in the past.

FURNITURE

Manufacturing is not as largely carried on as in past years, although as greatly sold. There is certainly no better place to largely manufacture furniture: Pine, Walnut, Cherry, Ash, Chestnut, Maple, Oak and other woods, are all abundant; workmen are plenty; and the means of shipping to the South and West by the rivers, at low freights, advantageous. There is no doubt that there are fine opportunities at Pittsburgh for the establishment of furniture factories, with a view of supplying Southern and Western markets.

There are now in Pittsburgh and Allegheny 11 manufactories, whose product is chiefly taken by the home demand.

Style of Firm.	Location.	Established by	Date.
Jos. Meyer & Son. . . .	412 Penn ave. . . .	Jos. Meyer,	1845
Christian Wetzel. . . .	505 Penn ave. . . .	C. Wetzel.	1869
Close, Schoeneck & Co.	10th and Penn av. .	W. E. Stevenson, . .	1837
G. H. Dauler & Sons. . .	178 Smithfield st. .	Hammer & Dauler. .	1837
F. G. Weise.	111 Fourth ave. . .	Jas. Lemon.	
A. Milligan & Son. . . .	66 Smithfield st. . .	A. Milligan & Co. . .	1836
T. B. Young & Co. . . .	21 Smithfield st. . .	T. B. Young & Co. . .	1842
A. Ortlieb.	90 Diamond.	A. Ortlieb.	1874
M. Seibert & Co.	157 Grant st.	C. Seibert & Co. . . .	1852
John M. Irwin.	97 Smithfield st. . .	John M. Irwin. . . .	1842
Henry Henck.	Washington.	Henry Henck.	1857

These 11 factories employ 300 hands, whose wages amount to \$184,000 yearly. They consume among other items over 1,000,000 feet of the various kinds of lumber; use upholstery goods to the value of \$60,000; hardware to the amount of \$35,000; marble to the sum of \$10,000. The annual sales of these eleven establishments amount to about \$850,000, included in which, however, is some eastern work. In addition to this there are some ten other large furniture houses, whose stock is principally brought from the east, which do not claim to manufacture. These sales amount in the aggregate to about \$500,000, and the entire furniture business of Pittsburgh and Allegheny may be stated at about \$1,400,000. The manufacturing establishments occupy 110,677 square feet of area; and the capital in the machinery and buildings of their factories is over \$200,000.

COOPERAGES

Are another of the manufactures that come under the lumber classification. The exact products and consumptions of this branch of business is difficult to definitely state, as many of the oil refineries have extensive cooperages in connection with their works. To separate the men, material consumed, wages paid, and other statistics, from out of those of the refineries, could not satisfactorily be done. In the following list therefore only those that are independent of connection with refineries are given. Of these there are nine:

Style of Firm.	Location.	Established by.	Date.
J. M. Hemphill.	112 North av.	J. M. Hemphill.	1863
C. Spratt.	3d and Middle sts.	C. Spratt & Co.	1865
Wm. League.	316 Penn av.	Robinson & Riley.	1862
Geo. F. Schade.	42d st.	Schade & Weigle.	1866
Fred. Kober.	Hickory ay.	W. H. Aufderhauser.	1862
John Wunderbech.	3d and Ferry	John Wunderbech.	1859
Reed Bros.	323 River av.	Reed Bros.	1873
A. Claney.	26th and Smallman.	A. Clayney.	
Alex. McClure.	25th and Railroad.	Poor & Reed.	1846

These nine establishments employ 334 hands, whose wages are about \$160,000. The proprietors give 512,000 barrels as the number manufactured in a year, and the value of their sales at \$770,000, and their consumption of iron for hoops at \$140,000. The cooperages occupy 203,436 square feet of ground. The statistics of this branch of Pittsburgh's manufactures is not full, by reason, as before stated, of many of the refineries carrying on cooperages as a part of their establishments, and the failure to obtain from others returns. The figures here given can only be looked upon as fragmentary. There are in the city two dealers in oil barrels and staves, whose statistics properly belong to this division of Pittsburgh's manufactures.

B. B. Moore.	Duquesne way.	1867.	B. B. Moore.
Duncan & Thomson.	Duquesne way.	1872.	Duncan & Thomson.

These firms handle 400,000 new barrels yearly, and 8,000,000 staves. In addition to the above cooperage, there is a special establishment.

THE PITTSBURGH KEG AND BARREL FACTORY COMPANY.

This is a chartered company, with a capital stock of \$100,000. They manufacture barrels by a patent process, by which the whole barrel is simply one stave. The log from which the staves is to be made, is cut to the proper length, and the lengths steamed. They are then run through a machine, the knife of which cuts a sheet from round the log. The circular slab thus taken off is then run through other machines, which, by various cuts and shapings, gives the proper bilge and cuts the chimes for the heads. The capacity of the works is 6,000 kegs and 1,000 barrels per day, and the establishment occupies a space of

136x304 feet, and there is \$70,000 capital in the building and machinery employed in the business.

Another manufacture of lumber is

STAIR BUILDING.

In latter years this branch of business has become quite an art. In the growing regard for architectural effects in building, which has increased with the wealth of the country and the ability of those building private dwellings to study taste and effect, rather than cost, the business of stair building has progressed a long distance from the clumsy, steep, tiresome stairs of early days. There are in Pittsburgh and Allegheny the following firms who make a specialty of the business. In addition to those, several of the sash and door factories embrace this business with their other:

Style of Firm.	Location.	Established by.	Year.
Jos. Welsh & Co. . . .	66 Lacock st. . . .	Welsh & Co. . . .	1864
Wm. Peoples. . . .	144 Webster st. . . .	Wm. Peoples. . . .	1856
A. Lewis.	Grant and 7th av. . .	Hill & McClure. . . .	1854
Wm. Boyd.	Penn and Third. . . .	Wm. Boyd.	1870
W. H. Roessle. . . .	Penn and 26th. . . .	W. H. Roessle. . . .	1873

These five establishments employ 65 hands, whose wages amount to about \$36,000 a year, and their sales will amount to about \$70,000 a year. They use 100 reams of sand paper a year, and 150 gross of screws, and some 200 kegs of nails. The lumber principally used by them is walnut, ash, oak and cherry. The factories occupy 26,000 square feet of ground.

There are also the following

WOOD TURNING AND SAWING

Establishments which, as consuming lumber and producing articles of which it is the material, are properly classed in this division:

Style of Firm.	Location.	Established by.	Date.
Wm. Guckert. . . .	178 Grant st. . . .	Valentine, Guckert & Bro	1840
Conkel & Cunningham.	Cherry ay near 5th av	T. H. Richard. . . .	1860
Jas. Paul.	183 Lacock st. . . .	Robt. Hays.	1858

These establishments employ 20 men, whose wages in the year amount to \$12,350, and other products to \$30,000. They use in the works 10 lathes, 10 saws, 3 boring machines, 1 rod machine, 1 mortising machine, 1 moulder and 1 planer. The capital in machinery is \$9,500, and the area occupied by the works 4,966 square feet. They use 90,000 feet of lumber and 30 reams of sand paper.

BELLOWS MANUFACTURING

Is also classed among the manufactures of lumber, although the consumption of leather and iron is perhaps equal of each to the lumber used. There are the following firms:

Style of Firm.	Location.	Established by.	Date.
D. K. Reynolds, . . .	89 Webster st. . .	Bell & Reynolds, . .	1871
Agnew, Somerville & Co.	34 Water st. . .	Agnew, Somerville & Co.	1872

These two establishments employ 8 men, whose wages average yearly \$5,150. They manufacture 660 pairs of bellows, consume hardware to amount of \$3,500; also 11,000 feet of leather, and other articles, as glue, buttons, paint and lumber. The value of their products is \$26,600.

COFFIN AND CASKET WORKS.

There are two of this class of manufactures in Allegheny City, as follows:

Firm.	Established	By	Location.
Wettach, Couch & Co.	1867.	Wilson, Brown & Co.	Market & Bayard.
Hamilton, Lemon, Arnold & Co.	1864.	Hamilton, Algeo, Arnold & Co.,	Mulberry st.

These two establishments manufacture 45,000 coffins and caskets a year. They employ 240 hands, whose wages amount to \$120,000 a year, and their sales average \$430,000 annually. They use 2,500,000 feet of lumber a year, of which 1,000,000 is Walnut, and the balance Pine and Poplar. Their consumption of hardware and trimmings amounts to \$80,000 a year. In the process of manufacturing they use 5 moulders, 5 sand-papering machines, 4 shapers, 18 saws, 3 planers. The factories occupy an area of 476x320 feet. The capital in buildings and machinery is about \$150,000. The value of the lumber consumed is about \$50,000.

Another industry by which lumber is manufactured into articles of commerce is the making of

MATCHES.

There is but one establishment of this kind in Pittsburgh. This business is carried on by G. W. H. DAVIS & Co., who employ 27 hands, to whom they pay wages to the amount of \$8,060. They use 100,000 feet of lumber, 5,500 lbs. of glue, 500 lbs. of phosphorus, 10,000 lbs. of Brimstone, 12 tons of paper for boxes; make 30,000 gross of matches yearly, the sales of which amount to \$67,000. The factory was established in 1856 by A. J. Griggs.

There are other minor manufactories which consume lumber: such as wooden pump making, skiff building, spar and oar making, but of which no statistics could be obtained; or when obtained were so deficient as to not be worth the presentation. From those here printed it would appear that the manufactories of Pittsburgh and Allegheny consuming lumber, and the crude lumber business, employ 2,488 hands, whose annual wages will amount to \$1,281,560; while the space occupied by the various works and yards is equal to 129 acres of ground; and the capital in machinery and buildings alone is \$1,323,203; and the total value of the products at present rates is \$7,542,600. It is more probable that, including those other branches of manufactures which belong to the division of woods, whose statistics could not be disintegrated from the other classes of manufactures in which they are absorbed, among which is the cooperages carried on by the refineries, that this division of business will exceed eight millions in value.

CHAPTER XII.

THE GLASS FACTORIES OF PITTSBURGH.

The first glass house in Pittsburgh is said to have been in operation in 1795, and was located at what is now called Glass House Ripple, in the Ohio, being in the Thirty-fifth ward of the city of Pittsburgh. Who built the works, or under what circumstances they were begun, there is no record to show, beyond the statement of one of the earliest workmen in glass in Pittsburgh, cited in a subsequent paragraph. It is however of record, that arrangements for the manufacture of this article were commenced at Pittsburgh by General James O'Hara, in company with Major Isaac Craig, in 1796. Mr. Wm. Eichbaum, of Philadelphia, was engaged to direct the erection of the works. We extract from a letter written by Major Craig, dated "Pittsburgh, June 12, 1797," to "Col. James O'Hara, Detroit," published in Craig's History of Pittsburgh, the following remarks in relation to the first movement: "I then took Mr. Eichbaum up the coal hill, and showed him the coal pits, called Ward's pits, and the lots on which they are, with all of which he was well pleased, both as to the situation and convenience of materials for building. I therefore immediately purchased of Ephraim Jones the house and lot near the spring, for one hundred pounds, and have made application to Ephraim Blaine for the two adjoining lots, which no doubt I will get on reasonable terms. These three lots are quite sufficient, and we are now quarrying lime and building stone, both of which are found on the lot. James Irwin is engaged to do the carpenter work; scantling for the principal building is now sawing; four log-house carpenters are employed in providing timber for the other buildings, and I am negotiating with a mason for the stone work." Although this enterprise of General O'Hara and Major Craig is usually considered the first step toward the creation of our present glass business, yet the author of this volume was informed over twenty years ago by William McCully, the founder of the present house of Wm. McCully & Co., one of our oldest glass manufacturers and a practical workman, having learned his trade in the glass house of General O'Hara, that in 1795 there was a small window glass factory at what is now called Glass House Ripple, on the west side of the Monongahela, known in the early times as "Scott's," having an eight pot furnace. The making of glass was carried on with wood, and there was made three boxes to a blowing.

The first glass house of General O'Hara had but eight pots, whose capacity was equal to three boxes to a blowing. To his perseverance Pittsburgh is indebted for the establishment of this important branch of her manufactures,

Major Craig having declined any further connection in the business in 1798. He built in 1802 additional glass works, and made preparations to carry on the flint glass business, sending an agent to England for the purpose of procuring workmen, but the person returned unsuccessful from his mission.

The success of these pioneer works is to be inferred from an article in Cramer's Almanack for 1804, which in an enumerative article on the manufacturing trade of Pittsburgh for 1803, contains the following lines:

"Glass, window bottles, jars, decanters, blue glass, \$12,500.

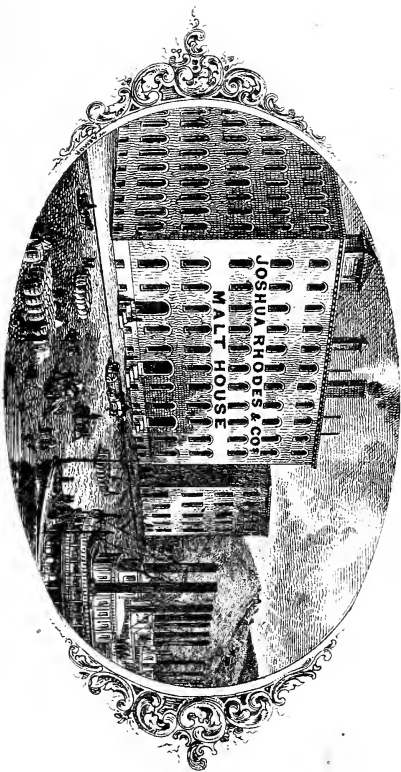
"Glass cutting. N. B.—Equal to any cut in the States of Europe—\$500."

The establishment of the manufacture of window glass west of the mountains is due, however, to the enterprise of the celebrated Albert Gallatin, who in 1787, in conjunction with a Mr. Nicholson and two Messrs. Kramers, (Germans), began the manufacture of window glass at New Geneva. This firm obtained from \$14 to \$20 per box for their glass and maintained high prices for a length of time, in opposition to the advice of Mr. Gallatin who wished to put the price down to \$4.50 per box, giving as his reason that the enormous prices the firm were obtaining would soon invite competition, whereas the rate of \$4.50 per box would not invite rivalry, and the business remaining in their hands alone would be sufficiently remunerative. This shrewd advice was overruled, and through competition the prices declined to \$8 per box, when the firm ceased manufacturing.

A number of the workmen of the eastern factories came from Frederick, Maryland, at which place the Messrs. Amlung erected large window glass factories somewhere between the close of 1798 and 1802 or 3. The Messrs. Amlung were unsuccessful, and the works being discontinued, many of the workmen came to Pittsburgh.

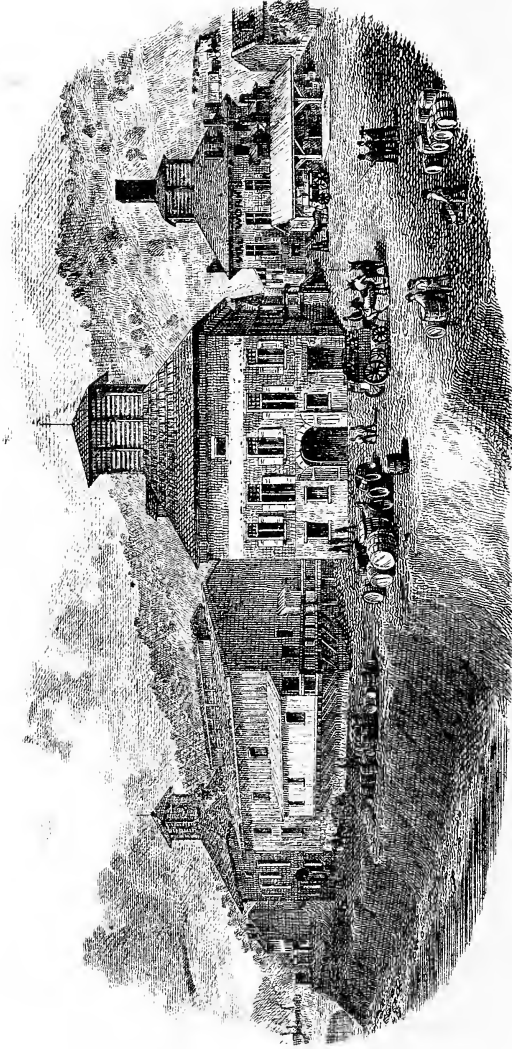
In 1807 the products of O'Hara's glass-factory are recorded as valued at \$18,000. In 1807 George Robinson, a carpenter by trade, and Edward Ensell, under the style of Robinson & Ensell, commenced the manufacture of flint glass, but owing to disagreements in the firm, transacted little or no business; and in 1808 they were bought out by Messrs. Bakewell & Page, by which house the manufacture of flint glass has been continued to the present time; being now known under the style of Bakewell, Pears & Co.

In 1810, according to "a cursory view of the principal manufactures in and adjacent to Pittsburgh," there were three glass works "in handsome operation" producing flint glass to the value of \$30,000, and bottles and window glass to the value of \$40,000. At the same date it is also mentioned of glass cutting: "This business has been recently established by an ingenious German, (Eichbaum,) formerly glass cutter to Louis XVI, late King of France. We have seen a *six light chandelier*, with prisms, which does credit to the workman and reflects honor on our country, for we have reason to believe it is the first ever cut in the United States."



Ohio Kiebs 14th Pittsburgh

VIEW ON ALLEGHENY RIVER, FOOT OF SEVENTH STREET.


$$W = W^{(0)} + \frac{1}{\lambda} W^{(1)} + \frac{1}{\lambda^2} W^{(2)} + \dots$$

VIEW IN THIRTY-THIRD WARD, CITY OF PITTSBURGH.
THOS. WIGHTMAN & CO.'S GLASS WORKS.

In 1813 the number of glass factories had increased to five, producing glass to the value of \$160,000.

In 1826 there were in operation in Pittsburgh and vicinity, seven glass works, viz:

	Boxes.
O'Hara's two works, called Pittsburgh Glass Works,	6,000
"Birmingham," opposite Pittsburgh,	4,000
New Albany, at mouth of Redstone creek, four miles below Brownsville,	4,000
"Benedict Kimber," at Bridgeport or Brownsville,	4,000
"New Boston," at Perryopolis on Youghiogheny,	2,000
Williamsport, occupied by W. Ihmsen,	3,000
Geneva Works, established by Albert Gallatin,	4,000
	27,000
Valued at,	\$135,000
In addition to which was made flint glass to the value of,	30,000
	\$165,000

In 1831 there were eight glass works, four producing flint and four producing window and green glass, to the value of \$500,000. In 1837 there were thirteen glass factories, six of which were flint glass works, and the balance green and window glass, making about \$700,000 worth of glass. Among these were the Sligo works of William McCully, established in 1828, and continued at the present day by W. McCully & Co. The flint glass works of Curling & Price, known as the Fort Pitt Glass Works, established in 1830, now carried on by their successor, E. D. Dithridge & Co. The window glass factory of F. Lorenz, now continued by Thos. Wightman & Co. Twenty years afterwards, in 1857, there were thirty-three factories at Pittsburgh, of which nine produced flint glass and twenty-four window, green and black glass, to the value of \$2,631,990. Employing 1,982 hands, whose wages were \$910,116, and they consumed material to amount of \$2,078,734.40.

In 1865 there were fifteen bottle and vial factories, fifteen window glass factories, and fifteen flint glass works in Pittsburgh, being forty-five glass works in all, an increase of forty per cent. in number in eight years.

Those fifteen window glass works, located immediately at Pittsburgh, had a capacity to make 520,000 boxes of glass a year, but their average yield is about 400,000 boxes, whose entire value at that time was \$2,600,000. The fifteen green or vial works produced annually about 420,000 gross, or 60,480,000 of vials and bottles, worth at rate then \$2,100,000. The pressure upon these works at that time is best shown by the fact that, although only customary to run them for ten months in the year, yet many of them had ran twenty-one months without stopping.

The fifteen flint glass works then in operation at Pittsburgh, produced about 4,200 tons of glassware, worth then, in round numbers, two millions of dollars. Their capacity was, however, double the amount produced, or about 8,000 tons.

The following tables showing the shipments of window glass and glass ware by rail from Pittsburgh in 1863 and 1864, are of interest, as showing the grasp of the trade in the business of the whole United States at that time. The shipments by river, of which no statistics are attainable, were to all Western States that could be reached by boat, and about equal in amount to the shipments by rail.

States.	Window Glass Boxes.	Glass Ware Packages.
Pennsylvania,	9,438	56,235
New York,	2,038	79,626
Maryland,	20	22,721
Massachusetts,	—	2,197
Canada,	850	4,268
Connecticut,	—	988
Rhode Island,	—	96
Delaware,	—	13
New Hampshire,	—	82
District of Columbia,	—	1,247
California,	—	50
New Jersey,	—	170
Vermont,	—	78
England,	49	43
Louisiana,	—	747
Ohio,	58,378	66,045
Indiana,	24,306	19,523
Illinois,	71,296	107,223
Wisconsin,	21,182	28,246
Minnesota,	2,003	3,368
Mississippi,	55	186
Missouri,	10,075	14,378
Iowa,	27,641	14,931
Kansas,	1,341	1,702
Nebraska,	209	303
Kentucky,	675	2,837
Michigan,	25,414	25,212
Virginia,	2,426	860
Tennessee,	120	574
Texas,	273	287
Total boxes Window Glass exported East,		11,633
“ “ “ “ West,		233,037
Total boxes Glass Ware exported East,		141,646
“ “ “ “ West,		308,009

At the date of the above tables of shipment, it appears from the report of the Commissioner of Internal Revenue, that the entire amount of revenue derived from glass manufactures by the 6 per cent. internal tax in the year from June 30, 1864, to June 30, 1865, was \$585,429.67, as follows:

In Maine, one district returning glass, paid,	\$	3,726	33
New Hampshire, one district returning glass, paid,		1,369	18
Massachusetts, seven " " "		103,583	06
Rhode Island, one " " "		645	31
Connecticut, three, " " "		4,050	04
New York, twenty-one " " "		89,643	17
New Jersey, five " " "		100,673	69
Pennsylvania, eight " " "		226,715	42
Maryland, one " " "		9,299	55
West Va., one " " "		18,849	26
Kentucky, two " " "		6,339	36
Ohio, five " " "		12,721	15
Illinois, two " " "		2,834	61
Missouri, one " " "		3,514	42
California, one " " "		1,444	92

From these figures it would appear that Pennsylvania paid forty-three per cent. of the entire revenue obtained throughout the United States from manufactured glass. The revenue from Pennsylvania was divided as follows:

First District, Philadelphia,	\$	1,269	75
Second " "		13,095	13
Third " "		24,027	13
Fifteenth " "		191	70
Eighteenth District, "		769	75
Twenty-first District,		12,486	55
Twenty-second District, Pittsburgh,		169,556	72
Twenty-fourth " "		4,818	39

From this it appears that the glass manufacturers of Pittsburgh paid a little over seventy-four per cent., or nearly three-fourths of the revenue from glass in Pennsylvania, and twenty-nine per cent., or nearly one-third of the sum obtained from the whole United States. This tax will be found to be largely increased in the report of the Commissioners for the year ending June 30, 1866, as there was returned to the Assessor, as sold from March, 1865, to March, 1866, \$4,606,074. The tax upon this was 6 per cent., which should give an amount of revenue from Pittsburgh equal to \$276,364.44.

The growth of the glass manufacturing of Pittsburgh from 1795 to 1865, the foregoing statements indicate. The present status, *eighty* years after the manufacture of glass was begun at Pittsburgh, the following tables show. No branch of the business of Pittsburgh shows a more steady increase. To-day Pittsburgh

is the great glass market of the United States, as she is of iron and steel. The facilities for manufacturing glass at Pittsburgh are not surpassed any where, and there is but little doubt that the long stretch she is ahead in the manufacturing of glass in the United States, will continue to be maintained. The introduction of the natural gas mentioned in the chapter on the manufacturing advantages of Pittsburgh, will, without question, do as much for this branch of manufacture as for others, where cost of fuel and quality is involved.

There are now at Pittsburgh the following:

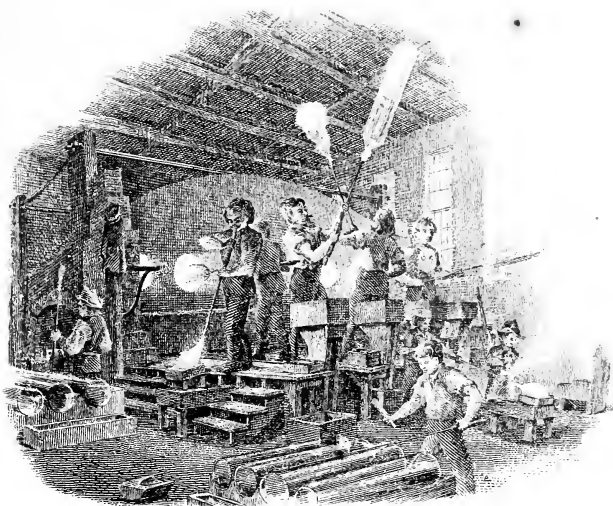
WINDOW GLASS FACTORIES.

Firm.	Office.	Estab'd.	Who by.	Furnaces	Pots.	Factories
Thos. Wightman & Co.	43 Wood st.	1796	Gen'l O'Hara,	3	30	3
C. I. Ihmsen & Co. . .		1810	C. Ihmsen,	1	20	1
Wm. McCully & Co. . {	20 Wood st.	1824	F. Lorenz,	2	20	2
		1854				
S. McKee & Co.	62 Water st.	1836	S. McKee & Co.	2	20	2
R. C. Schmertz,	97 First ave.	1836	Wm. Eberhart,	2	16	2
A. & D. H. Chambers,	6 Bingham st.	1841	Anderson, Chambers } & Co. }	3	30	3
Cunningham & Ihmsen,	109 Water st.	1849	Cunningham & Co. .	2	20	2
Wolfe, Howard & Co. .	4 Wood st. .	1859	Wolfe, Howard & Co.	1	10	1
Wells,				1	10	1
Stewart, Estep & Co. .	Jane and 22d.	1866	Melling, Estep & Co.	2	16	2
Duff & Campbell, . . .	110 Water st.	1866	Page, Zellers & Duff,	1	10	1
Phillips & Co.	19th & Mary,	1866	Beck, Phillips & Co.	1	10	1
Knox, Kim & Co. . . .	70 Carson st.	1867	Knox, Kim & Co. . .	2	14	2
Iron City Window } Glass Co. }	69 Water st.	1874	Iron City Window } Glass Co. }	1	8	1

These 24 factories employ 1200 hands, whose wages amount to \$1,000,000 annually. They consume 19,200 tons of sand, 7,200 tons of soda ash, 4,800 tons of lime, 2,400 tons of fire clay, 8,400,000 feet of lumber, 2,445,600 bushels of coal and coke, 750 tons of straw, 1680 barrels of salt, 3,400 cords of wood, and nails, iron and castings to the amount of \$10,000. They work 44 horses, and employ 36 wagons in hauling. They produce 840,000 boxes, of fifty feet each, of window glass per year, weighing 29,400 tons, whose value at present rates is \$2,500,000. The works occupy a space of 47 acres, and there is \$1,557,000 of capital in the buildings, machinery and ground.

The manufacture of window glass was the earliest established here, and the amount manufactured is quite one-half of all made in the United States. The largest size of double strength is made from 4 in. by 5 in. up to 42 in. by 78 in.

The market for the productions of the window glass of Pittsburgh is constantly extending. The tables given of the shipments by rail in 1864-5, showing the reach of this trade throughout the United States, would be much augmented



Arnold & Co. Lith.

INTERIOR OF A WINDOW GLASS WORKS.

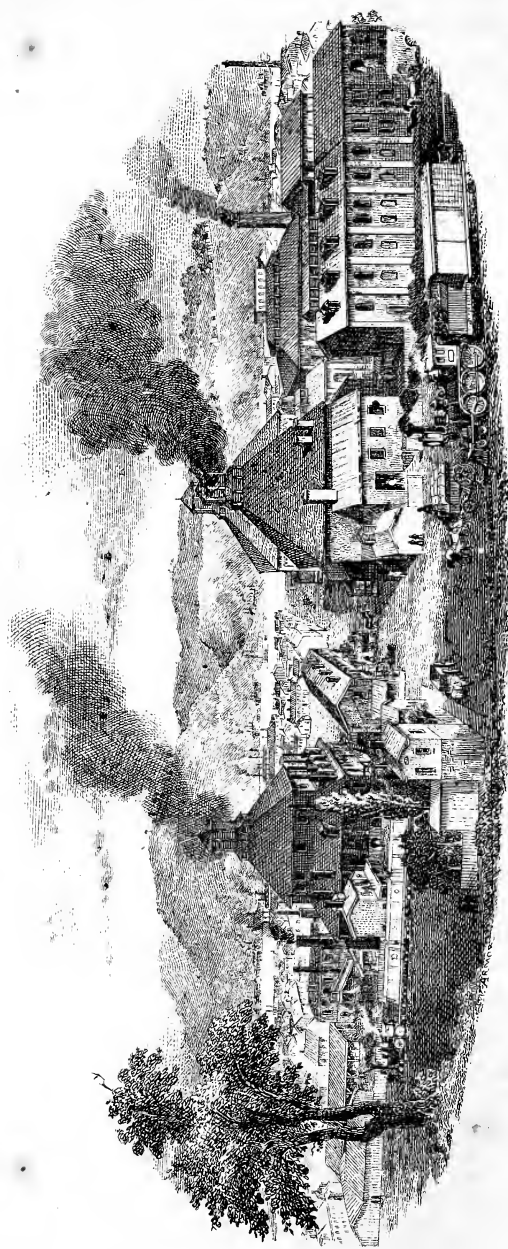
MAKING WINDOW GLASS CYLINDERS.



Arnold & Co. Lith.

INTERIOR VIEW OF A GLASS WORKS.

MAKING BOTTLES.



VIEW IN THE TWENTY-FIFTH WARD OF THE CITY OF PITTSBURGH.
CUNNINGHAM & IHMSEN'S GLASS WORKS.

if similar tables of the past three or four years were compiled. In the southeastern States especially the increase has been marked. The facilities for the production of glass at Pittsburgh, as before stated, are unsurpassed, and with the facilities, skill and experience which eighty years of window glass manufacturing has accumulated here, combined with the mineral facilities, the transportation advantages that exist, Pittsburgh must remain, as she always has been, the great window glass market of the United States.

There are also the following

CRYSTAL OR TABLE GLASSWARE FACTORIES.

Style of Firm.	Office.	Estab'd.	By.	Furnaces	Pots	Factories.
Bakewell, Pears & Co.	8th and Bingham	1808	Bakewell & Page. . .	2	20	2
O'Hara Glass Co. . .	30th & Railroad.	1837	Parks, Campbell & Co.	2	20	2
Adams & Co. . . .	10th & Williams.	1851	Adams, Macklin & Co.	2	21	2
Bryce, Walker & Co.	95 Water street.	1850	Bryce, McKee & Co. .	3	31	3
McKee Bros		1850	F. & J. McKee. . . .	4	40	4
Campbell, Jones & Co.	87 Water st. . .	1863	Shephard & Co. . . .	2	20	2
Plunkett & Co. . . .	14th & Breed, s s.	1863	Plunkett & Co. . . .	1	10	1
Challiner, Hogan & Co.	8th & Washing'tn	1864	Pitts. G. M. Co. . . .	1	10	1
King, Son & Co. . . .	18th street, s s.	1865	Johnston, King & Co.	2	20	2
Richards & Hartley } Flint Glass Co. }	Pride & Marion.	1866	Richards & Hartley } Flint Glass Co. }	1	10	1
Doyle & Co.	10th & Washing'n	1866	Doyle & Co.	1	10	1
Ripley & Co.	8th and Bingham	1866	Ripley & Co.	1	10	1
Geo. Duncan & Son.	10th near Carson	1866	Ripley & Co.	2	20	1
Crystal Glass Co. . .	16th & Washing'n	1869	Crystal Glass Co. . .	2	20	2

These twenty-four crystal glass factories manufacture all descriptions of table ware in almost endless variety of articles and styles. They employ 1,895 hands, to whom they pay \$1,233,000 wages. They use 3,060 tons soda ash, 11,700 tons sand, 760 tons nitrate soda, 600 kegs nails, \$4,000 of bar iron, 825,-760 bushels of coal, 150,560 bushels of coke, boxes to the value of \$130,450 for packing, 35,475 bushels of lime, 2,460 tons of straw. The capital in the buildings, machinery and grounds is \$1,304,587, and the space occupied by the buildings, &c., is 109 acres. They work 34 horses and use 23 wagons. They produce 15,000 tons glass, worth \$2,250,000.

There are also four

FLINT (VIAL AND BOTTLE OR DRUGGIST) GLASS WORKS.

Firm.	Office.	Estab'd.	By.	Furnaces.	Pots	Factories.
Wm. McCully & Co. .	20 Wood. . . .	1855	T. A. Evans.	2	17	2
W. H. Hamilton & Co.	26 Wood. . . .	1863	W. H. Hamilton. . . .	2	18	2
Agnew & Co.	153 First avenue	1866	Jno. Agnew & Sons . .	2	11	2
Tibby Bros.	13 Wood st. . .	1866	Tibby Bros.	2	20	2

These eight factories occupy a space of seven acres, and the capital in buildings, machinery and grounds is \$191,000. They employ 619 hands, whose wages amount to \$395,000 a year. They consume 900 tons soda ash, 3,250 tons sand, 23,500 bushels of lime, 210 tons nitrate of soda, 60,000 bushels of coke, 371,000 bushels coal, 610 tons of straw, 50,000 fire brick, 90 tons fire clay, boxes to the value of \$50,000, for packing, 14 tons of iron, 250 kegs of nails, employ 16 horses and 10 wagons in hauling. They produce bottles and vials worth about five hundred thousand dollars.

There are also eleven

GREEN GLASS WORKS.

Firm.	Office.	Estab'd.	By.	Fur-naces.	Pot.	Facto-ries.
Thos. Wightman, . . .	43 Wood st.	1837	W. McCully,	2	12	2
S. McKee & Co., . . .	62 Water st.	1836	S. McKee & Co., . . .	1	7	1
A. & D. H. Chambers,	6th & Bing'm.	1841	Chambers & Agnew, .	2	12	2
Cunningham & Ihmsen,	109 Water st.	1849	Cunningham & Co., .	1	8	1
Wm. Frank & Son, . .	92 First ave.	1854	E. Wormser & Co., .	1	6	1
Wm. McCully & Co., .	20 Wood st.	1833	Wm. McCully,	2	14	2
Phillips & Co., . . .	19 & Mary st.	1866	Beck, Phillips & Co.,	1	8	1
C. Ihmsen & Sons,* .		1810	C. Ihmsen,	1	8	1

*Estate in hands of assignees—not running.

These 11 green glass or bottle factories manufacture all descriptions of green and black bottles, fruit jars and similar articles. They employ 944 hands, whose annual wages amount to \$566,000. They use 3450 tons of soda ash, 12,050 tons of sand, 66,400 bushels of lime, 1060 barrels of salt, 465 tons of pot clay, 625 kegs of nails, 22 tons of iron, 65,000 fire brick, 86,000 bushels coke, 940,000 bushels coal, 625 cords wood, 1560 tons straw, boxes and barrels to the value of \$107,000 for packing, and employ 21 wagons and 36 horses in hauling. The works occupy a space of 18 acres, and the capital in machinery, buildings and ground is about \$925,000. The value of the product is \$1,350,000.

There is also 9

GLASS CHIMNEY FACTORIES.

Firm.	Office.	Estab'd	By.	Fur-naces.	Pots	Facto-ries.
Dithridge & Co., . . .	Washington st.	1830	Curling & Price, . . .	2	20	2
Excelsior Flint G. Co.	8 Wood st. . . .	1863	Excelsior Flint G. Co.	1	10	1
Evans, Sell & Co., . .	22d & Josephine.	1869	Reddick & Co., . . .	2	20	2
Keystone Flint Glass } Manufactu'g Co. }	3d and Try sts.	1872	Keystone F. G. M. Co.	1	10	1
Kunzler & Co., . . .	Foot 17th st., s s.	1874	Kunzler & Co., . . .	2	20	2
James Lindsay & Co.	6 Wood street. .	1872	James Lindsay & Co.	1	10	1

These nine factories occupy a space of 27 acres, and the capital in buildings, machinery and ground, is \$260,000. They employ 790 hands, whose wages amount to \$365,000 a year. They consume 325 tons pearl ash, 480 tons of lead, 600 tons soda ash, 278 tons nitrate of soda, 2,340 tons of sand. They burn 469,000 bushels of coal, 60,000 bushels coke; use 725 tons straw for packing, about \$12,000 worth of pots for the furnaces; also, \$58,000 worth of boxes and barrels for packing, and about 250 cords of wood. They produce annually about 16,200,000 chimneys worth \$600,000.

This is a branch of the glass making of Pittsburgh, which owes a great increase to the introduction of Petroleum, and is one of the additional sources of wealth which the utilizing of that mineral substance opened to Pittsburgh.

All the flint glass chimnies made in the United States are manufactured at Pittsburgh, and four-fifths of all other kinds.

From the foregoing exhibit of the five divisions of glass manufacturing in Pittsburgh it appears that the total of factories is 73, having 690 pots. There are employed 5,248 hands, whose wages average annually \$3,479,000. The total material consumed amounts to 12,110 tons soda ash, 48,340 tons of sand, 152,000 bushels of lime, 1,218 tons of nitrate of soda, 793,560 bushels of coke, 4,523,760 bushels of coal, 4,025 cords of wood, 6,055 tons of straw, 2,760 barrels of salt, 250 tons pearl ash, 360 tons lead, 150,000 fire brick, 2,955 tons German clay, 2,100 kegs of nails. They employ 96 wagons and 130 horses in hauling, and pay \$484,250 for packing boxes. The space occupied by the buildings is equal to 208 acres; and the capital in buildings machinery and grounds is \$4,137,587. The entire value of the products will average, at present rates, \$7,500,000.

CHAPTER XIII.

THE COAL BUSINESS OF PITTSBURGH.

Coal was known in England as early as A. D. 853, and was applied to economical purposes about the middle of the twelfth century. In Begium, according to tradition, a blacksmith discovered the value of coal as fuel, in 1198; and in 1239 the men of New Castle, England, were granted the privilege of digging coals by King Henry III.

From old writers upon the subject, it appears that the mining of coal was, in the early days of its introduction as a fuel, conducted under special charters. Its extraction in Belgium was prior to the fifteenth century, subject to the control and supervision of an especial court; and in Scotland, one of the *privileges* granted to a religious house in A. D. 1291, was that of mining coal.

The adoption of coal as a substitute for wood was gradual, and many prejudices had to be dissipated before the use of it became general.

In Paris, the medical faculty was employed in the beginning of the fifteenth century in making a decision of how far this new description of fuel was injurious to health; and in the early part of the sixteenth century the citizens of London petitioned Parliament against the use of coals. Proclamations were issued in the reigns of the first Edward, of England, and of Queen Elizabeth, forbidding the use of coal during the sitting of Parliament, lest the health of the Knights of the Shire should suffer from its consumption, during their residence in London.

It seems incredible that a human being should be condemned to suffer death for burning coal, yet history records that a citizen of London, for violation of a stringent law prohibiting its use in England, was executed. So great an evil was once deemed that mineral, now considered so great a good, that the value of the yearly extraction from the deposits of that mineral in Great Britain, Belgium, France, Prussia and Pennsylvania was, in 1848, estimated at \$145,200,000, and every year since has largely increased the demand and supply.

Taylor, in his coal statistics, computes that the above-mentioned sum is "nearly nine times the annual value of the gold and silver exported from Mexico, or six times that of the gross produce of the precious metal in North and South America and Russia." A momentary consideration of the immense excess in value, which is thus shown to be possessed by coal over the gold and silver of the world, fully prepares the mind to admit that Pittsburgh is richer in her coal fields than the balance of the world, in all their deposits of precious metals.

The extent of the bituminous coal field by which Pittsburgh is surrounded in her own State, and from which she derives revenue, is 15,000 square miles—being equal to 8,600,000 acres. The amount of coal contained in that area, it is extremely difficult to estimate, because of the variations of strata, and want of reliable information as to the number of workable coal veins to be found in the same depth from the surface reached by the English and French mines. The upper, or Pittsburgh seam alone, would, estimating it at an average of eight feet in thickness, contain in that area 1,498,464,000,000 bushels, or 53,516,430,000 tons of coal—the value of which, at an average rate of five cents per bushel, would be worth \$74,923,200,000, or more than the bullion production of the United States, at its present rate of \$70,000,000 annually, would amount to in one thousand years.

The tract of ground containing such a value of mineral, was purchased by the Proprietaries, as the Penn family and their coadjutors were styled in 1768 and 1784—one hundred years ago, *for the sum of \$10,000.*

As the purport of this chapter is only to show the statistics of the coal trade of Pittsburgh, so far as they can be obtained, it is not to the purpose to present the area of the coal field of Pittsburgh in comparison with those of other States, nor its quality. In the chapter on the “Mineralogical Position of Pittsburgh,” those things are presented.

In Pittsburgh coal appears to have been used as early as 1784, and was then mined from the hill immediately opposite the city, where the Penns granted the privilege at £30 a lot, “to dig coal as far in as the perpendicular line falling from the summit of the hill.”*

From that day to the present, Coal Hill, as it is familiarly called, has furnished large quantities of fuel to this locality; and at no point has coal of a better quality, for all purposes for which it is used, been discovered. The importance of this mineral, and its value to Pittsburgh, is so largely dwelt upon in the chapters of this work devoted to the mineralogical position of the city and its manufacturing advantages that it is unnecessary to remark further here upon the subject. The extent to which it is mined, the cost of its extraction, and the various expenses attendant upon taking it to market, are points which the distant reader will be gratified to find discussed under the title heading this section of the volume.

Until 1850 all the coal exported from this city was floated down the river in large flat-bottomed boats, which were usually one-hundred and twenty-five feet long, sixteen feet wide, and eight feet deep, with flat perpendicular sides, bow and stern. Each boat of this size holds about 15,000 bushels of coal, and they were floated to their destination lashed in pairs. The usual complement of hands for such boats was twenty-three or twenty-four. These boats could only be floated down the river, or as it is technically termed, “run,” in the high floods that generally, from time to time, in the spring and fall of each year, swell the current of water in the Ohio river. Of late years a system of towing has

been introduced by barges and steamboats constructed expressly for the trade, which, being adopted, has caused the Pittsburgh "coal boat" to disappear from the waters of the Ohio and Mississippi rivers.

The towing of coal was begun in 1850, the "Lake Erie" making three trips with four barges each time, carrying 16,000 bushels. She was, in March, 1851, followed in the trade by the "Black Diamond," owned by N. J. Bigley, carrying 20,000 bushels in four barges, from which time the towing of coal has been successfully carried on.

It is from the four pools of the Monongahela river that the large proportion of the coal barges start upon their voyage to points below. It is, however, in the harbor of the city of Pittsburgh that the coal tows so called are formed. These tows consist of twelve barges and one steam tow boat. The barges are of an average measurement of four hundred and fifty tons, and the steam tow boats average one hundred and fifty tons admeasurement. The barges hold an average of twelve thousand bushels of coal, and are of an average length of one hundred and thirty feet, and twenty-four feet in breadth, and cost from \$500 to \$1,000 each. Of these barges twelve are lashed to the steamer; one being lashed to each side, while ten are placed in front, five in length and two wide, being literally shoved along instead of towed. This whole mass of boats and coal is firmly attached by lashing in one body, of which the steam tow boat is the rear centre, and propels the flotilla from the interior of the mass, instead of dragging it along, as might be supposed from the term towing, which is the popular term for this mode of taking coal to market. The bulk of coal thus moved in one of these tows, so called, varies from 100,000 bushels to 130,000 bushels, and is the product of an acre or an acre and a half of coal. Each of these tows require the services of an average of twenty-four hands, whose wages average about sixty dollars a day. The time usually employed in going to Cincinnati with one of these tows is four days, and to Louisville five days. It takes two more days to make the return trip. To New Orleans the time is two weeks, and the return trip between three and four weeks. The average cost per barge for towing to Cincinnati is \$75.00, and to Louisville \$110. The stores and provisions for the round trip cost about \$200.00. These tow boats consume an average of 1000 bushels of coal, costing five cents a bushel, each day, while running.

As before stated the great bulk of the coal that is in this manner transported to the markets below Pittsburgh, is taken from the collieries on the Monongahela river, which is slackwatered, and divided into six pools. It is from the first four of these, ascending the river about sixty miles, that at present the bulk of the coal mined and loaded on that river is taken. The following tables show the collieries in those four pools and their details. It is proper here to state, however, that *the acres of coal given in the table only represents the number of acres remaining in the original tract* belonging to the collieries when first established. In most cases these collieries own the river fronts, and there are large tracts of coal lying back of those now being worked out.

TABLE NO. 1 OF COLLIERIES IN POOL NO. 1, MONONGAHELA RIVER,
SHOWING:

Firm.	Estab'd	Who By.	Address	Hands.*	Bush. Mined
H. B. Hays & Bro. . .	1828	Jas. H. Hays. . .	142 Water st	500	4,000,000
Joseph Walton & Co.	1863	Haberman & Co. . .	134 Waterst	175*	1,500,000*
Corry & Co.	1865	Corry & Co.	6 av & Wood	75	1,500,000
A. H. Kenny & Co. . .	1835	Robert McClure, .	Braddocks,	70	500,000
Redman & Fawcett, .	1849	Henning & Fawcett,	87 Water st.	140	1,500,000
J. D. Risher,	1860	Daniel Risher, . . .	Hope Chur.	125	1,800,000

*The discrepancies in amount of coal mined as compared with number of hands, arise from some collieries working greater number of days and less force, making a greater "out-put."

TABLE NO. 2 OF COLLIERIES IN POOL NO. 1,
SHOWING:

Firm.	Wages.	Houses.	Value	Pit Wagons	Value.	Improvements.	Horses.	Mules
H. B. Hays & Bro.	160,000	200	100,000	500	\$15,000	300,000	10	20
Joseph Walton & Co.	60,000	25	15,000	160	4,800	30,000	—	10
Corry & Co.	50,000	15	7,500	100	3,000	60,000	3	15
A. H. Kenny & Co.	48,000	6	2,400	45	1,350	5,000	—	6
Redman & Fawcett,	60,000	50	20,000	100	3,000	45,000	—	10
J. D. Risher,	56,000	45	22,500	125	3,750	34,000	—	11

TABLE NO. 3 OF COLLIERIES IN POOL NO. 1,
SHOWING:

Firm.	Acres Coal.	Miles Pit Track	Tow Boats.	Value.	Barges.	Value.	Flats.	Value.	Loco-motives	8 wheel cars.
H. B. Hays & Bro.	3,500	30	—†	—	—	—	—	—	3	—
Joseph Walton & Co.	150	3	6	148,000	140	140,000	36	14,400	1	—
Corry & Co.	40	1	—	—	—	—	—	—	—	40
A. H. Kenny & Co. .	5	1½	—	—	4	1,600	3	900	—	—
Redman & Fawcett,	110	4*	—	—	—	—	8	2,400	—	—
J. D. Risher,	110	3	—	—	—	—	—	—	1	—

*T Rail. †See Hays Coal Co.

TABLE NO. 1 OF COLLIERIES IN POOL NO. 2, MONONGAHELA RIVER,
SHOWING :

Firm.	Colliery Estab'd	Who By.	Office.	Men.	Bush. Mined Yearly.
Joseph Walton & Co.	1855	O'Neil & Berry, . . .	134 Water.	175	1,500,000
Joseph Walton & Co.	1870	Walton & Co. . . .	134 Water.	175	1,500,000
G. & W. Jones, . . .	1848	T. Jones & Co. . . .	Smd. & 1 av	90	800,000
O'Neil & Co.	—	—	118 Water.	—	—
Foster, Clark & Wood,	—	Blackburn & Co. . . .	69 Water st.	125	1,000,000
Lynn, Wood & Co. . .	1850	John O'Neil,	69 Water st.	150	1,600,000
Wm. Stone's Estate,	1856	Stone & McGrew, . .	141 Water.	150	2,000,000
J. C. Risher,	1866	Jas. O'Neil,	160 1st ave.	100	1,000,000
J. C. Risher & Co. . .	1852	J. C. Risher.	160 1st ave.	100	1,000,000
Geo. Lysle & Sons, . .	1855	Jas. O'Neil,	80 Water st.	175	1,250,000
Culp & Gamble, . . .	1850	Wm. Hodsen,	Coal Valley	100	1,400,000
Horner & Roberts, . .	1859	Horner & Roberts, . .	64 Water st.	200	2,000,000
Robert Wood,	1870	A. Love,	Elizabeth.	150	1,200,000
Farrow, Gumbert & Co	1858	Mr. Eagan,	10 Smithf'd	125	1,600,000
Robbins & Jenkins, . .	1851	Pollock, Dunseath & Co	69 Water st.	120	1,000,000
Wm. Neil,	1846	George Blackstock, .	M'Keesport.	25	400,000
Wm. Neil,	1846	J. Neil & Bro.	M'Keesport.	60	480,000
Neil & Oliver,	1843	David Collins,	M'Keesport.	125	2,000,000
Wm. H. Brown.	1846	M. Correy.	25 Smithfd.	325	4,000,000

TABLE NO. 2 OF COLLIERIES IN POOL NO. 2,
SHOWING :

Firm.	Yearly Wages.	Houses.	Value.	Pitt Wagons.	Value.	Improve- ments.	Horses.	Mules.
Joseph Walton & Co. . .	\$64,000	40	\$24,000	140	\$4,200	\$45,000	3	17
Joseph Walton & Co. . .	64,000	60	36,000	160	4,800	80,000		10
G. & W. Jones,	32,000	8	8,000	84	2,520	25,000	1	9
O'Neil & Co.	—	—	—	—	—	—	—	—
Foster, Clark & Wood,	40,000	10	4,000	100	3,000	31,400		10
Lynn, Wood & Co. . . .	80,000	75	37,500	200	6,000	105,000	6	12
Wm. Stone's Estate, . .	80,000	35	21,000	210	6,300	50,000	8	12
J. C. Risher,	84,000	60	15,000	115	3,450	1,500		12
J. C. Risher & Co. . . .	84,000	40	16,000	120	3,600	20,000		12
Geo. Lysle & Sons, . . .	96,000	46	18,400	150	4,500	253,000	1	11
Culp & Gamble,	64,000	35	7,000	70	2,100	15,000		7
Horner & Roberts, . . .	88,000	70	33,600	180	5,400	40,000	1	10
Robert Wood,	80,000	22	16,500	143	4,290	60,000		7
Farrow, Gumbert & Co. .	70,000	18	9,000	146	4,300	40,000	3	9
Robbins & Jenkins, . . .	60,000	33	16,500	125	3,750	18,000	4	8
Wm. Neil,	16,000	20	10,000	40	1,200	25,000		2
Wm. Neil,	40,000	12	6,000	84	2,520	20,000		6
Neil & Oliver,	80,000	6	1,200	136	4,080	25,000		8
Wm. H. Brown.	128,000*	150	37,500	275	8,250	45,000	—	20

*25 Coke ovens, worth \$6,250, producing 500,000 bushels of coke a year.

TABLE NO. 3 OF COLLIERIES IN POOL NO. 2,

SHOWING :

Firm.	Acres Coal.	Miles Pit Track	Tow Boats.	Value.	Barges.	Value.	Flats.	Value.	Loco- motives
Joseph Walton & Co. . .	200	3	—*	—	—	—	—	—	1
Joseph Walton & Co. . .	200	5	—*	—	—	—	—	—	1
G. & W. Jones, . . .	100	1	1	\$ 3,000	10	\$ 5,000	8	\$1,600	—
O'Neil & Co.	—	—	4	35,000	—	—	—	—	—
Foster, Clark & Wood, .	240	3	—	—	—	—	10	2,500	—
Lynn, Wood & Co. . . .	325	3	4	39,000	—	—	—	—	1
Wm. Stone's Estate, . .	350	3	3	48,000	90	72,000	20	8,000	—
J. C. Risher,	450	5	4	103,000	113	56,500	24	6,000	—
Geo. Lysle & Co. . . .	300	3	2	55,000	45	31,500	10	3,000	—
Culp & Gamble,	15	3	—	—	6	3,000	6	1,800	—
Horner & Roberts, . . .	700	4	—	—	—	—	8	2,800	1
Robert Wood,	70	3	—	—	—	—	7	2,100	1
Farrow, Gumbert & Co, .	275	3	1	28,000	—	—	2	800	—
Robbins & Jenkins, . . .	140	4	1	—	—	—	6	2,400	—
Wm. Neil,	10	2	2	40,000	40	40,000	4	1,600	—
Wm. Neil,	10	2	—	—	—	—	—	—	—
Neil & Oliver,	225	3	—	—	40	32,000	4	1,200	—
Wm. H. Brown.†	550	15	8	200,000	278	270,000	47	14,100	1

*See Pool No. 1.

†See Pool No. 3.

TABLE NO. 1 OF COLLIERIES IN POOL NO. 3, OF MONONGAHELA RIVER.

SHOWING :

Firm.	Estab'd.	Who By.	Office.	Men	Bush. Mined Yearly.
Iron City Coal Co. . .	1864	Phillip & Mittenzwei,	21st st., s. s.	75	1,290,000
Hedgens & Co.	—	—	—	40	600,000
Wm. C. Guffy,	1859	Blackmore & Nelson,	136 Water st.	50	600,000
Jno. Gilmore,	1876	Jno. Gilmore,	120 Water st.	75	800,000
Jacob Tomar, Jr. . . .	1859	Jno. Gilmore,	Webster . . .	50	700,000
Robbins, Lynn & Co.	1862	Milesville Coal Co. .	120 Water st.	40	800,000
Harlem Coal Co. . . .	1872	Staib & Co.	Monon'la City	40	500,000
Stoft & Cocain,	1875	Stoft & Cocain, . . .	165 2nd av. .	40	600,000
Harlem Coal Co. . . .	1848	— Shellin,	Monon'la city	50	700,000
Staib & Co.	1860	Rea & Rodgers, . . .	" "	50	700,000
Harlem Coal Co. . . .	1857	H. H. Findley,	" "	85	1,000,000
Robison Bros.	1863	R. & S. B. Robison,	Allegheny. . .	50	1,500,000
Wm. H. Brown,*	1858	Black Diamond C. Co.	25 Smithfield	200	1,500,000
Whigham, Bailey & Co	1856	Kirk & Berry.	Water st. . .	60	800,000
Hiram Warne,	1863	Coulter & Co.	Monon'la City	65	500,000
Wm. H. Brown,*	1861	Jenkins & Bro.	25 Smithfield	125	700,000
Lindsey, McCutcheon & Griers. . . }	1873	Lindsey, McCutcheon & Griers.	Allegheny, . .	90	680,009
Henry Lloyd,	—	—	Pittsburgh,	40	400,000
Jno. Dippold,	1852	Cincinnati Coal Co. .	"	100	800,000
J. P. Walters & Co. . .	1852	Cleveland Coal Co. .	"	100	800,000
Jno. D. Negley,	1852	Jas. K. Logan,	"	60	720,000
Miller, Greenhalgh & Co. }	1845	Jno. Jenkins,	120 Water St.	80	—
Louttit, Skillen & Co.	1848	Jas. Leech,	Elizabeth, . .	30	400,000
Hodgson & Mort, . . .	1873	Hodgson & Mort, . . .	Coal Bluff, . .	125	800,000

*See Pool No. 2.

TABLE NO. 2 OF COLLIERIES IN POOL NO. 3,
SHOWING :

Firm.	Wages.	Houses.	Value.	Pit Cars.	Value.	Improvements.	Horses.	Mules.
Iron City Coal Co.	\$40,000	32	\$10,000	60	\$1,800	\$8,000	—	8
Hedgens & Co.	8,000	16	3,200	40	1,200	3,000	—	5
Wm. C. Guffy,	20,000	22	4,400	52	1,560	5,000	1	4
Jno. Gilmore,	40,000	33	6,900	64	1,920	8,000	6	8
Jacob Tomar, Jr.	24,000	12	1,800	45	1,350	2,500	—	6
Robbins, Lynn & Co.	28,000	17	3,800	75	2,250	3,000	—	4
Harlem Coal Co.	16,000	6	1,800	40	1,200	15,000	—	2
Stoft & Cocain,	28,000	1	1,000	28	840	7,000	—	6
Harlem Coal Co.	12,000	10	4,000	60	1,800	5,000	—	6
Staib & Co.	12,000	32	9,600	60	1,800	5,000	—	6
Harlem Coal Co.	36,000	8	3,200	75	2,250	10,000	—	7
Robison Bros.	24,000	18	7,200	40	1,200	16,000	9	5
Wm. H. Brown,	48,000	70	28,000	150	4,500	9,000	—	10
Whigham, Bailey & Co.	70,000	25	7,500	110	3,300	—	8	—
Hiram Warne,	24,000	40	12,000	37	1,110	—	—	4
Wm. H. Brown,	30,000	35	14,000	100	3,000	10,000	—	6
Lindsay, McCutcheon & Co.	30,000	23	7,500	80	2,400	25,000	—	4
Henry Lloyd,	16,000	—	—	60	1,800	10,000	—	8
Jno. Dippold,	32,000	20	9,000	85	2,550	10,000	—	7
J. P. Walters & Co.	28,000	20	5,000	75	2,250	39,500	—	7
John D. Negley,	24,000	40	10,000	68	1,840	7,000	—	4
Miller, Greenhalgh & Co.	40,000	40	12,000	100	3,000	25,000	—	5
Loutitt, Skillen & Co.	13,000	15	3,000	27	810	3,000	1	3
Hodgson & Mort,	—	18	18,000	75	2,250	—	—	3

TABLE NO. 3 OF COLLIERIES IN POOL NO. 3,
SHOWING :

Firm.	Acres Coal.	Miles Pit Track	Tow Boats.	Value.	Barges	Value.	Flats.	Value.	Loco-motives
Iron City Coal Co.	230	2	2	\$15,000	25	\$22,500	13	\$3,900	—
Hodgens & Co.,	82	1½	—	—	—	—	—	—	—
Wm. C. Guffy,	100	¼	—	—	—	—	13	2,600	—
Jno. Gilmore,	187	1	3	52,000	40	34,000	10	3,000	—
Jacob Tomar, Jr.,	25	2	—	—	—	—	3	900	—
Robbins Lynn & Co.	380	1	—	—	—	—	—	—	—
Harlem Coal Co.	127	1	—	—	—	—	—	—	—
Stoft & Cocain,	80	¼	—	—	—	—	5	2,000	—
Harlem Coal Co.	15	1½	—	—	—	—	—	—	—
Staib & Co.	90	1	—	—	—	—	—	—	—
Harlem Coal Co.	400	1½	—	—	—	—	—	—	—
Robison Bros.	300	2	—	—	—	—	24	9,600	—
Wm. H. Brown,	325	5	—	—	—	—	—	—	—
Whigham, Bailey & Co.	275	4	—	—	—	—	5	7,000	—
Hiram Warne,	100	3	1	14,000	—	—	8	2,400	—
Wm. H. Brown,	1,000	8	—	—	—	—	—	—	—
Lindsay, McCutcheon & } Griers, }	148	3	—	—	—	—	22	8,000	—
Henry Lloyd,	650	2	—	—	—	—	—	—	—
John Dippold,	440	6	3	75,000	60	42,000	9	3,600	—
J. P. Walters & Co.	120	2½	—	—	—	—	—	—	—
Jno. D. Negley,	300	1½	—	—	—	—	—	—	—
Miller, Greenhalgh & Co.	225	4½	—	—	—	—	—	—	—
Loutitt, Skillen & Co.	15	1½	1	7,000	—	—	8	800	—
Hodgson & Mart,	230	1	1	10,000	1	400	3	1,200	—

TABLE NO. 1 OF COLLIERIES IN POOL NO. 4, MONONGAHELA RIVER,
SHOWING:

Firm.	Opened.	Who By.	Post Office.	Men	Bush. Mined Yearly.
J. S. Cunningham & Co.	1852	Thos. Fernam, . . .	Brownsville,	100	1,000,000
Jos. Garrow,	1875	Jos. Garrow,	California, .	20	240,000
Morgan, Dickson & Co.	1873	N. W. Morgan, . . .	Pittsburgh, .	75	800,000
Crowthers & Musgrave,	1870	Smith & Ward, . .	California, .	35	400,000
Bigley, Forsythe & Co.	1854	Robt. Forsythe, . .	Pittsburgh, .	30	720,000
J. S. Neel,	1853	Moore & Young, . .	"	70	1,200,000
E. C. Furlong & Co. . .	1871	Geo. J. Long, . . .	Pike Run, . .	50	600,000
J. Leadbetter & Co. . .	1874	J. Leadbetter & Co.	Pittsburgh, .	40	800,000
J. W. Reed & Co. . . .	1868	Jesse Reed,	"	40	400,000
J. V. Smith & Co. . . .	1867	S. E. Smith,	Pike Run, . .	40	1,040,000
Crow & Sons,	1874	Crow & Sons,	"	35	600,000
Wood & Huston,	1862	Wood & Huston, . .	Greenfield, .	50	800,000
F. H. Coursin,			McKeesport,	60	1,200,000
Morgan & Dickson, . .	1870	Morgan & Lambert,	Pittsburgh, .	60	700,000
Jno. Steeft,	1870	J. V. McDonald, . .	"	30	400,000
Wellington & Troy, . .	1850	Henry Stimmel, . .	Fayette City,	24	240,000
Wellington & Troy, . .	1860	J. F. & W. R. Troy,	"	30	240,000
Turnbull & Co.			"	35	600,000
Jas. Rutherford,	1865	Jas. Rutherford, . .	"	40	800,000
Frazier & Frye,	1870	Frazier & Frye, . .	145 Water St.	85	1,343,940
L. M. & W. F. Speer, .	1869	L. M. & W. F. Speer,	Belleverson,	50	700,000
Connecticut Coal Works	1865	— Sterling, . .	Fayette City,	5	
Clark & McAlear, . . .	1864	McGowan & Connell	Pittsburgh, .	50	400,000
J. W. Clarke,	1864	S. Clarke & Son, . .	"	75	600,000
J. W. Clarke,	1864	S. Clarke & Son, . .	"	75	600,000

TABLE NO. 2 OF COLLIERIES IN POOL NO. 4,
SHOWING:

Firm.	Wages.	Houses.	Value.	Pitt Cars.	Value.	Improvements.	Horses.	Mules.
J. S. Cunningham & Co. .	\$40,000	1	\$ 500	50	\$1,500	\$14,400	—	6
Jos. Garrow,	3,200	2	300	6	180	2,400	—	1
Morgan, Dickson & Co. .	40,000	—	—	30	900	4,000	—	4
Crowthers & Musgrave, .	16,000	1	1,200	20	600	10,000	—	2
Bigley, Forsythe & Co. .	11,200	2	1,000	14	420	3,000	—	2
J. S. Neel,	24,000	2	1,000	50	1,500	6,000	2	2
E. C. Furlong & Co. . .	24,000	2	800	30	900	20,000	1	2
J. Leadbetter & Co. . .	16,000	2	300	36	1,080	15,000	—	4
J. W. Reed & Co. . . .	16,000	2	1,300	46	1,380	6,000	—	5
J. V. Smith,	3,200	3	600	47	1,410	6,000	—	4
Crow & Sons,	13,600	1	600	35	1,050	8,000	—	4
Wood & Huston,	13,600	8	4,000	57	1,710	6,000	1	4
F. H. Coursin,	24,000	12	7,200	45	1,350	40,000	—	4
Morgan & Dickson, . . .	24,000	12	7,200	34	1,020	4,000	—	4
Jno. Steeft,	12,000	3	2,100	20	600	8,000	1	2
Wellington & Troy, . .	5,600	4	800	19	570	12,000	—	1
Wellington & Troy, . .	6,000	22	4,400	14	420	3,000	1	1
Turnbull & Co.	13,600	10	2,000	28	840	3,000	—	3
Jas. Rutherford,	14,000	20	6,000	24	720	3,000	—	3
Frazier & Frye,	32,000	15	7,500	65	1,950	15,000	—	8
L. M. & W. T. Speer, . .	32,000	35	8,750	50	1,500	6,500	1	7
Connecticut Coal Co. . .	22,500	6	1,500	15	450	4,500	—	1
J. W. Clarke,	32,000	30	24,000	100	3,000	15,000	—	9
J. W. Clarke,	32,000	30	24,000	100	3,000	15,000	—	9
Clark & McAlear, . . .	20,000	20	12,000	50	1,500	15,000	—	5

TABLE NO. 3 OF COLLIERIES IN POOL NO. 4,

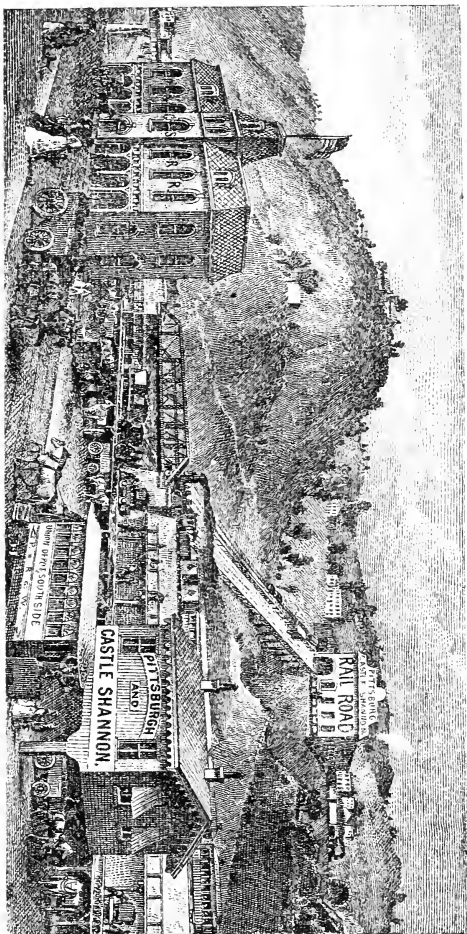
SHOWING:

Firm.	Acres Coal.	Miles Pitt Track.	Tow Boats.	Value.	Barges.	Value	Flats.	Value.
J. S. Cunningham & Co., . . .	500	1 $\frac{3}{4}$	—	—	1	\$ 500	6	\$2,400
Jos. Garrow,	13	1 $\frac{1}{4}$	—	—	—	—	2	300
Morgan, Dickson & Co., . . .	90	1 $\frac{3}{4}$	1	12,000	6	4,800	14	5,600
Crowthers & Musgrave, . . .	60	2	—	—	1	800	10	4,000
Bigley, Forsythe & Co., . . .	20	1 $\frac{1}{2}$	—	—	—	—	5	2,000
J. S. Neel,	125	1 $\frac{1}{4}$	—	—	—	—	10	4,000
E. C. Furlong,	90	1	—	—	1	300	5	1,000
J. Leadbetter & Co.,	90	1	—	—	—	—	5	2,500
J. W. Reed & Co.,	20	2	1	4,500	—	—	36	9,000
J. P. Smith,	—	1 $\frac{1}{4}$	—	—	—	—	—	—
Crow & Sons,	440	1 $\frac{3}{4}$	—	—	—	—	4	2,000
Wood & Huston,	40	2	1	—	—	—	8	3,200
F. H. Coursin,	140	1 $\frac{1}{2}$	—	—	2	1,000	8	3,200
Morgan & Dickson,	126	1 $\frac{1}{2}$	—	—	8	6,400	11	3,300
Jno. Steeft,	90	1	1	15,000	6	6,000	—	—
Wellington & Troy,	33	1 $\frac{1}{4}$	—	—	—	—	5	2,000
Wellington & Troy,	100	1 $\frac{1}{4}$	—	—	—	—	5	2,000
Turnbull & Co.,	50	1	—	—	—	—	23	9,200
Jas. Rutherford,	160	1	—	—	4	1,600	13	2,600
Frazier & Frye,	100	3	1	15,000	—	—	24	9,600
L. M. & W. F. Speer,	250	3	1	20,000	10	8,000	6	1,800
Coonnecticut Coal Co., . . .	211	1 $\frac{1}{4}$	—	—	—	—	—	—
Clark & McAleer,	200	—	—	—	—	—	—	—
J. W. Clarke,	200	2 $\frac{1}{2}$	3	53,000	75	5,280	21	6,300
J. W. Clarke,	200	2	—	—	—	—	—	—

In addition to these, there are a number of firms who not owning collieries, are dealers and shippers of coal and who obtain their coal from the various collieries by purchase. Owning towboats and barges of their own, they run coal to all the various ports below from Cincinnati to New Orleans, and also St. Louis and points on the upper Mississippi.

SHIPPERS (ONLY) OF COAL.

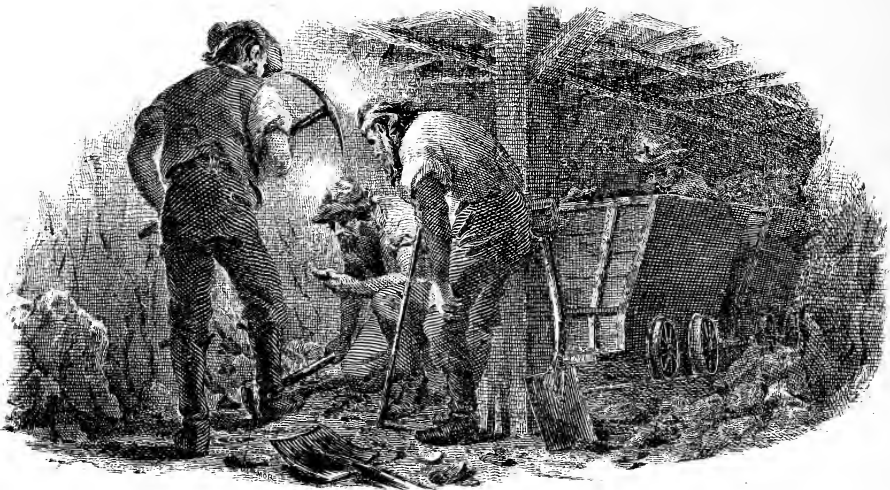
Firm.	Barges	Value.	Tow Boats.	Value.	Flats.	Value.	Office.
Thos. Fawcett & Son, . . .	50	40,000	3	125,000	10	4,000	87 Water street.
Mulvegil, Gumbert & Co.	—	—	1	—	—	—	—
S. Roberts & Co.	32	25,600	2	37,000	—	—	118 Water street.
R. & J. Wotson,	25	20,000	2	60,000	3	900	158 First avenue.
S. Horner & Sons,	75	60,000	5	—	6	2,100	64 Water street.
Riddle, Coleman & Co. . .	52	30,000	4	90,000	12	3,600	3 Smithfield st.
Miller, Lynn & Co.	—	—	—	—	—	—	—
Couch & Robinson, . . .	17	13,600	—	—	—	—	136 Water street.
Thos. McGowan,	8	6,400	1	20,000	2	700	145 Water street.
Cumberland Coal Co. . . .	14	42,400	1	25,000	2	700	Smithfield street.
Hornet Coal Co.	25	20,000	1	20,000	3	900	74 Water street.
Dravo & McDonald,	10	34,000	1	20,000	1	300	74 Water street.
Jno. F. Dravo,	20	16,000	1	8,000	3	1,500	74 Water street.
Petrie & White,	—	—	1	4,000	—	—	89 Water street.
J. B. Sneathen & Co. . . .	—	—	2	—	—	—	118 Water street.
C. S. Adams & Co.	3	18,000	1	8,000	5	2,000	132 Water street.
Jas Neel & Co.	3	2,100	1	10,000	3	900	McKeesport.
Hays Coal Co.	63	63,000	1	28,000	12	4,800	142 Water street.



From Pittsburgh, Pa. 1874

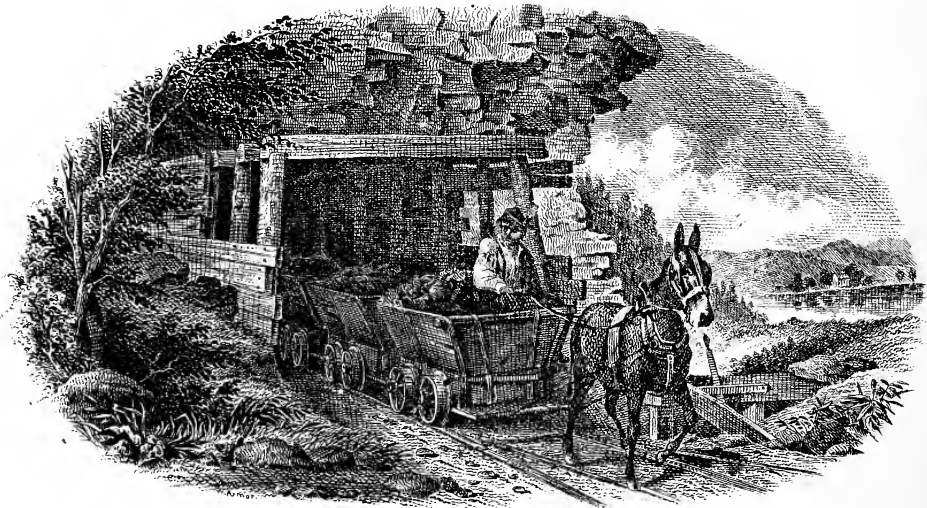
VIEW IN THIRTIETH WARD, SOUTH SIDE.

CASTLE SHANNON RAIL ROAD DEPOT.



Arnot Fairbairn & Co. Lith.

INTERIOR OF A COAL MINE.



Cut Krebs Lith. Pittsburgh.

COAL PIT MOUTH.

In the foregoing presentation of the collieries on the four pools of the Monongahela slackwater, the amounts given as yearly mined are, while given nearly correct, not presented as the absolute turn out, although they are the approximate yearly average in each case. The following table shows, however, absolutely the amount passing the locks of the Monongahela Navigation Co. for thirty-one years, and represents the actual amount brought to the city, by that channel, for home consumption, and shipped down the Ohio during those years:

Year.	Pool No. 1.	Pool No. 2.	Pool No. 3.	Pool No. 4.	Total.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1844, . .					737,150
1845, . .	2,527,879	1,328,604	314,342	434,360	4,605,185
1846, . .					7,778,911
1847, . .	3,377,703	4,188,258	1,227,201	851,965	9,645,127
1848, . .	3,536,761	3,986,643	1,436,666	859,291	9,819,361
1849, . .	2,944,044	4,420,347	1,434,723	909,393	9,708,507
1850, . .	3,998,200	5,540,470	1,862,548	906,749	12,297,967
1851, . .	4,105,624	5,846,168	1,769,302	800,134	12,521,228
1852, . .	4,797,704	7,188,539	1,736,622	907,976	14,630,841
1853, . .					15,716,367
1854, . .	4,756,263	9,251,532	2,006,633	1,317,518	17,331,946
1855, . .	6,829,282	11,485,072	2,633,555	1,286,100	22,234,009
1856, . .	3,910,978	3,213,740	1,031,613	427,764	8,584,095
1857, . .	7,859,775	17,255,226	2,731,959	1,126,636	28,973,596
1858, . .	7,082,600	15,143,868	2,500,025	970,176	25,696,669
1859, . .	7,591,500	15,732,845	3,469,137	1,493,189	28,286,671
1860,* . .	10,550,380	20,861,200	4,878,704	1,603,346	37,967,732
1861, . .	4,483,717	11,495,900	3,595,705	1,296,400	20,865,722
1862, . .	4,801,856	10,094,100	2,739,500	948,500	18,583,956
1863, . .	5,935,392	14,182,600	4,481,810	1,844,450	26,444,252
1864, . .	7,202,175	18,415,700	6,549,700	2,903,342	35,070,917
1865,* . .	8,013,693	19,132,400	8,915,600	3,402,200	39,522,797
1866,* . .	8,813,200	23,064,500	7,577,600	3,059,100	42,615,300
1867,* . .	6,139,200	16,075,200	5,555,200	2,274,900	30,072,700
1868,* . .	8,796,400	23,802,700	7,622,600	5,079,300	38,301,000
1869,* . .	8,868,900	29,129,800	8,988,400	5,525,500	52,512,600
1870,* . .	8,070,700	32,132,000	10,012,400	7,381,300	57,596,400
1871, . .	6,966,200	27,348,700	8,300,400	6,006,000	48,621,300
1872, . .	8,989,000	28,614,500	9,176,000	7,429,300	54,208,806
1873, . .	7,820,100	28,416,150	9,619,628	10,309,360	56,173,238
1874, . .	9,113,500	33,516,700	11,440,800	11,810,700	65,881,700
1875, . .	9,200,300	31,729,900	7,911,900	12,566,900	61,409,000
Total, .	170,216,539	389,347,313	115,330,903	62,743,846	737,931,101

*From Pool No. 5, there was in 1860, 54,100 bushels; in 1865, 58,900; in 1866, 100,900; in 1867, 28,200; in 1868, 9,800; 1869, 23,600; in 1870, 20,000.

The total amount of tolls paid in these twenty-eight years for the passing of this amount of coal was \$1,253,041.37. The bulk represents 7,380 acres of coal run out in the twenty-eight years. In the last five years the amount has averaged 576 acres a year.

There are also anumber of persons engaged in the towing of coal and other merchandise, with steam tow-boats, whose boats and barges are here given as being, some directly and others indirectly, engaged in the coal trade of Pittsburgh, and their exhibit is most fittingly presented in connection with the coal trade.

TABLE OF COAL TOW BOATS AND BARGES AS CLASSED ABOVE.

Firm or Owner.	Office.	Tow Boats.	Value.	Barges.	Value.	Flats.	Value.
Capt. R. Craig,	132 Water st.	1	\$ 8,000	—	—	1	\$ 300
Riddle & Co.,	132 Water st.	1	10,000	—	—	1	300
Capt. J. G. Fairfield, . . .	134 Water st.	1	6,000	—	—	1	300
Capt. Longwell,	—	1	—	—	—	—	—
W. S. B. Hays,	—	1	7,000	—	—	7	2,450
Capt. Jos. Nixon,	—	1	10,000	15	\$18,000	1	400
Jas. Smith & Co.	—	2	—	3	2,400	11	3,850
L. Monell,	—	1	5,000	—	—	—	—
M. Winnet,	—	1	5,000	—	—	—	—
Thos. Chester,	—	1	—	—	—	—	—
Cavitt, Reese & Co. . . .	—	1	8,000	—	—	—	—
Gray's Iron Line,	94 Water st.	3	78,000	19	75,000	—	—
Briggs & Keer,	118 Water st.	1	10,000	11	8,800	—	—
Jos. Keeling & Sons, . . .	118 Water st.	1	10,000	60	48,000	—	—
Fowler & Whitfield,	—	1	—	—	—	—	—

A portion of this coal here calculated as passing from Pool No. 1, is from the collieries on the Youghiogheny river, the details of which are exhibited in a similar manner of those of the Monongahela river, in the tables showing the collieries on the line of the Pittsburgh and Connellsville Rail Road.

The collieries on the Pittsburgh, Cincinnati & St. Louis Railway, are shown in the following table. The coal from these works is chiefly brought to Pittsburgh; some part of it is, however, shipped directly from the mines. The collieries on this road extend along its line for a distance of 22 miles.

TABLE NO. 1 OF COLLIERIES ON PITTSBURGH, CIN. & ST. LOUIS RAILWAY.
SHOWING:

Firm.	Estab'd.	By.	Post Office.	Men	Bush. Mined Yearly.
D. Steen & Son.	1860	D. Steen.	Pittsburgh.	161	2,000,000
Fort Pitt Coal Co. . . .	1865	Fort Pitt Coal Co. . .	"	200	1,000,000
F. C. Negley.	1865	F. C. Negley.	"	165	1,550,000
Mansfield Coal & Coke Co	1865	Mansfield C. & C. Co.	"	265	2,500,000
Dickson, Stewart & Co.	1866	Dickson, Stewart & Co	"	103	1,000,000
Pitts. Nat. Coal & Coke Co	1866	Pitts. Nat. C. & C. Co.	"	130	1,500,000
Pitts. & Walnut Hill Co.	1866	Robbins & Raplee. .	Midway.	125	1,000,000
Midway Coal & Coke Co.	1870	Midway Coal Co. . .	"	130	1,040,000
Hugh Richardson's Heirs	1872	Hugh Richardson. . .	McDonald.	60	800,000
Oak Ridge Coal Co. . .	1873	Oak Ridge Coal Co. .	Oakdale.	85	900,000
Wm. P. Rend & Co. . .	1873	Wm. P. Rend & Co. .	Pittsburgh.	275	1,500,000
Robbins Block Coal Co.	1874	T. B. Robbins. . . .	Midway.	150	1,500,000

TABLE NO. 2 OF COLLIERIES OF PITTSBURGH, CINCINNATI & ST. LOUIS RAILWAY,
SHOWING:

Style of Firm.	Wages Paid.	Houses.	Value.	Pit Cars.	Value.	Improvements.	Horses.	Mules.
F. C. Negley.	\$65,000	2	\$ 1,000	175	\$5,250	\$73,000	18	20
Pitts. Nat. Coal & Coke Co.	67,000	26	10,400	200	6,000	26,000	2	16
Fort Pitt Coal Co.	45,000	38	11,400	175	5,250	55,000	—	15
Mansfield Coal & Coke Co.	100,000	20	8,000	200	6,000	40,000	1	13
Dickson, Stewart & Co. . .	47,000	22	8,800	40	1,200	14,000	—	5
W. P. Rend & Co.	65,000	22	13,200	140	4,200	35,000	4	22
D. Steen & Son.	70,000	29	11,600	90	2,700	22,000	20	8
Huntsman, Miller & Co. . .	24,000	19	5,700	100	3,000	2,000	—	7
Hugh Richardson's Heirs.	24,000	4	1,600	45	1,350	4,500	—	4
Pitts. & Walnut Hill Co. . .	50,000	9	5,600	100	3,000	30,000	3	9
Robbins Block Coal Co. . .	75,000	13	11,700	140	4,200	30,000	5	9
Midway Coal Co.	45,000	15	7,500	90	2,700	20,000	—	7
Oak Ridge Coal Co.	40,000	2	1,600	36	1,080	15,000	—	2

TABLE NO. 3 OF COLLIERIES ON PITTSBURGH, CINCINNATI & ST. LOUIS RAILWAY,
SHOWING:

Style of Firm.	Acres of Coal.	No. of R. R. Cars.	Value.	Miles Pit Track	No. of Coke Ovens.	Value.	Bush. of Coke.
F. C. Negley,	653	111	\$ 30,000	6	—	—	—
Huntsman, Miller & Co. . . .	350	45	15,000	6	—	—	—
Pitts. Nat'l Coal & Coke Co.	400	66	23,600	6	—	—	—
Fort Pitt Coal Co.	380	67	18,200	5	16	4,200	180,000
Mansfield Coal & Coke Co. . .	800	78	32,800	6	22	5,500	400,000
Hugh Richardson's Heirs, . .	30	—	—	1	—	—	—
Dickson, Stewart & Co. . . .	440	26	7,800	2	—	—	—
W. P. Rend & Co.	233	420	100,000	2½	5	750	65,000
Oak Ridge Coal Co.	250	19	11,400	2	—	—	—
D. Steen & Son,	136	90	36,000	4½	—	—	—
Pittsburgh & Walnut Hill Co.	600	150	90,000	5	8	2,000	400,000
Robbins Block Coal Co. . . .	200	—	—	3	—	—	—
Midway Coal Co.	100	—	—	4	—	—	—

Another division of the Pittsburgh coal and coke trade is along the Connellsville & Pittsburgh Railroad and the Youghiogheny river. The principal portion of this is transported by the railroad. It is along this line of road that the famous Connellsville coke is so largely produced, from the coal of this section.

The following tables exhibit the cokeries along the road and its branches, and present the details of their working status.

TABLE NO. 1 OF COKERIES ON PITTSBURGH & CONNELLSVILLE RAILROAD,
SHOWING:

Firm.	Estab'd	Who by.	P. O.	Men.	Bushels of Coke a Year.
Tyrone Mines,	1858	Laughlin & Co. . .	Pittsburgh.	61	*2,000,000
Con'llsville Gas Coal Co.	1865	C. G. C. Co. . . .	Con'llsville	85	2,190,000
Pitts. & Con.G.C. & C.Co.	1865	P. & C. G. C. & Co.	Con'llsville	225	5,694,000
Frick & Co.	1871	Frick & Co. . . .	Broad Ford	175	4,745,000
J. M. Cochran. . . .	1870	J. M. Cochran. . .	"	40	1,460,000
Brown & Cochran. . .	1854	Jas. Cochran & Bros.	"	400	10,950,000
Waverly Coal & Coke Co.	1873	Waverly C. & C. Co.	Pittsburgh	200	*1,500,000
Thos. Moore.	1863	Thos. Moore. . . .	Moore's Sta.	350	—
Lemont Furnace Co. . .	1875	Lemont F. Co. . . .	Pittsburgh	200	—
Youghiogeny C.&C.Co.	1863	Yough. C. & C. Co.	—	250	3,678,000
N. J. Bigley.	1846	N. J. Bigley. . . .	Pittsburgh	175	894,250

*Product used entirely by the Eliza Furnace.

TABLE NO. 2 OF COKERIES ON PITTSBURGH & CONNELLSVILLE RAILROAD,
SHOWING:

Firm.	Wages.	Houses.	Value.	Pit Cars.	Value.	Improve- ments.	Horses.	Mules.
Tyrone Mines,	\$ 30,000	30	\$12,000	40	\$1,200	—	—	—
Connellsville Gas Coal Co.	38,250	40	17,000	60	1,800	\$ 50,000	6	4
Pitts. & Conns. G. C. & C. Co.	101,250	80	24,000	75	2,250	136,590	12	4
Frick & Co.	78,750	53	45,000	70	2,100	80,000	1	13
J. M. Cochran & Co. . . .	18,000	9	4,500	28	840	35,000	—	5
Brown & Cochran. . . .	180,000	146	72,000	180	5,400	200,000	34	11
Waverly Coal Co.	90,000	74	18,000	140	4,200	72,500	3	15
Lemont Furnace Co.*. . .	—	40	12,000	24	720	—	12	15
Youghiogeny C. & C. Co.	112,800	45	36,000	107	3,210	61,000	4	13
N. J. Bigley.	80,000	40	18,000	100	3,000	—	4	12
Thos. Moore.	157,500	45	45,000	120	3,600	110,000	6	8

* See Uniontown Branch.

TABLE NO. 3 OF COKERIES ON THE PITTSBURGH & CONNELLSVILLE R. R.
SHOWING:

Firm.	Acres of Coal.	No. R. R. Cars,	Value.	Miles Pit Track	Coke Ovens.	Value.
Tyrone Mines,	—	30	\$ 15,000	—	120	\$ 30,000
Connellsville Gas Coal Co.	3,100	24	14,400	3	100	25,000
Pitts. & Conn. Gas Coal & Coke Co.	350	147	88,200	3	253	63,250
Frick & Co.	280	15	9,000	3	200	54,250
J. M. Cochrane.	140	—	—	1½	63	15,750
Brown & Cochrane.	650	180	108,000	13	441	110,250
Waverly Coal & Coke Co.	1,000	74	40,400	3	20	6,000
Thos. Moore.	537	41	24,600	3	30	7,500
Lemont Furnace Co.	300	6	1,200	2	105	26,000
Youghiogeny Coal and Coke Co. . .	1,000	113	67,800	3	20	5,000
N. J. Bigley.	195	56	33,600	3	35	8,750

TABLE NO. 1 OF COKERIES ON UNIONTOWN BRANCH, P. & C. R. R.

SHOWING :

Firm.	Estab'd.	Who By.	P. O. Address.	Men	Bush. of Coke.
Hogsett, Watt & Co.	1871	Hogsett, Watt & Co.	Mt. Braddock.	80	2,340,000
Hogsett & Beal, .	1871	E. M. Furguston & Co	Mt. Braddock.	50	1,820,000
Lemont Furnace Co.	1875	Lemont Furnace Co.	Lemont station	—	1,664,000
T. H. Frost & Son,	1865	Thomas H. Frost. .	Frost station,	50	93,600*
T. W. Watt & Co. .	1868	Taylor, Watt & Co.	Dunbar, . .	72	1,533,000
Paul, Brown & Co.	1871	Paul, Brown & Co.	Dunbar, . .	100	2,190,000
R. Henderson & Co.	1872	R. Henderson & Co.	Dunbar, . .	70	1,752,000

*Supplies Railroad with 1,095,000 bush. of coal in addition.

TABLE NO. 2 OF COKERIES ON UNIONTOWN BRANCH OF P. & C. RAILROAD,

SHOWING :

Firm.	Wages.	Houses.	Value.	Pit Cars.	Value.	Improvements.	Horses.	Mules.
Hogsett, Watt & Co. . .	\$36,000	35	\$15,000	50	1,500	\$75,000	2	5
Hogsett & Beal. . . .	22,500	20	12,000	30	900	25,000	2	2
Lemont Furnace Co. . .	21,000	—	—	24	720	48,000*	—	—
T. H. Frost & Co. . . .	22,500	6	1,800	16	480	5,000	1	1
T. W. Watt & Co. . . .	32,400	15	6,250	25	750	30,000	—	6
Paul, Brown & Co. . . .	45,000	8	5,000	35	1,050	30,000	1	4
R. Henderson & Co. . .	31,500	8	3,200	25	750	30,000	6	4

*See previous table.

TABLE NO. 3 OF COKERIES ON UNIONTOWN BRANCH OF P. & C. RAILROAD,

SHOWING :

Firm.	Acres Coal.	No. Rail Cars.	Value,	Miles Pit Track.	/ Coke Ovens.	Value.
Hogsett, Watt & Co. . . .	400	—	—	5	130	\$ 32,500
Hogsett & Beal.	100	—	—	2	70	17,500
Lemont Furnace Co. . . .	300	6	\$ 3,600	2	105	26,250
T. W. Watt & Co.	90	—	—	2	60	15,000
Paul, Brown & Co.	100	—	—	2	100	25,000
P. Henderson & Co. . . .	100	6	3,600	1½	70	17,500
T. H. Frost & Co.	75	—	—	1	5	1,250

TABLE NO. 1 OF COKERIES ON MT. PLEASANT BRANCH OF P. & C. R. R.,
SHOWING :

Firm.	Estab- lished.	Who By.	Post Office.	Men.	Bush. Coke Yearly.
Wm. Duncan & Bro.	1872	W. & J. Duncan, . . .	Mt. Pleasant,	15	468,000
Wm. L. Mullen,	1872	W. D. Mullen & Co. . .	"	27	842,400
Boyle & Hazlett,	1872	John Moyer,	"	35	1,950,000
Boyle & Hazlett,	1872	Boyle & Hazlett, . . .	"	32	1,560,000
John T. Stauffer,	1873	Jno. T. Stauffer, . . .	Stauffer Sta'n	8	312,000
Cochran & Ewing,	1874	Cochran & Ehrling, . .	"	21	936,000
J. T. Overholt,	1874	J. T. Overholt, . . .	Mt. Pleasant,	15	624,000
Markle & Co.	1874	Markle & Co.	West Overton	50	1,456,000
J. Stauff & Co.	1874	J. Stauff & Co.	"	10	312,000
Israel Painter,	1874	Painter & Strickler, . .	"	24	1,144,000
A. S. R. Overholt & Co.	1874	A. S. R. Overholt & Co.	"	26	1,248,000
J. P. Stauffer & Co.	1875	J. P. Stauffer & Co. . .	"	20	702,000
Imhsen, Lake & Co.	1875	Imhsen, Lake & Co. . .	Scottdale,	16	800,000
W. A. Keifer,	1872	W. A. Keifer,	Fount'n Mills	5	208,000
Morgan & Co.	1858	A. S. M. Morgan, . . .	Broadford,	70	2,184,000
Strickler & Lane,	1873	Strickler & Lane, . . .	"	22	936,000
Markle, Sherrick & Co.	1871	Markle, Sherrick & Co.	Sherritt Sta'n	75	2,184,000
Hurst, Moore & Co.	1871	Hurst, Moore & Co. . .	Broadford,	60	2,372,500
C. H. Armstrong & Son	1875	C. H. Armstrong & Co.	"	60	1,560,000
A. A. Hutchinson & Bro.	1872	A. A. Hutchinson & Bro.	"	60	1,560,000
Cochran & Strickler,	1864	Cochran & Strickler, . .	"	17	611,750
Laughlin & Co.	—	—	—	—	—

TABLE NO. 2 OF COKERIES ON MT. PLEASANT BRANCH OF P. & C. RAILROAD,
SHOWING :

Firm.	Wages.	Houses.	Value.	Pit Cars.	Value.	Improve- ments.	Horses.	Mules.
Wm. Duncan.	\$ 6,750	5	\$ 2,500	12	\$ 360	\$ 9,500	3	—
Wm. L. Mullen.	12,150	8	4,000	18	540	19,000	2	3
Boyle & Hazlett.	15,750	14	3,500	31	930	30,000	3	4
Boyle & Hazlett.	14,850	8	2,400	28	840	24,000	3	6
John T. Stauffer.	3,600	5	1,000	6	180	6,000	2	—
Cochran & Ewing.	9,450	5	3,000	14	420	20,000	—	5
J. T. Overholt.	6,750	4	1,600	11	330	15,000	3	2
Markle & Co.	22,250	8	2,000	24	720	30,000	4	5
J. Stauff & Co.	4,500	3	600	9	270	4,500	3	—
Israel Painter.	10,800	6	2,300	19	510	24,000	6	4
A. S. R. Overholt & Co.	11,700	5	9,000	23	690	29,000	5	4
J. P. Stauffer & Co.	9,000	4	1,800	16	480	14,000	4	2
Imhsen, Lake & Co.	7,200	4	1,400	16	480	15,500	1	3
W. A. Kiefer.	2,250	2	500	3	90	5,000	1	1
Morgan & Co.	31,500	25	20,000	40	1,200	60,000	1	7
Strickler & Lane.	9,900	5	6,000	14	420	20,000	—	3
Markle, Sherrick & Co.	33,750	20	10,000	35	1,050	45,000	1	5
Hurst, Moore & Co.	27,000	20	10,000	28	840	45,000	1	4
C. H. Armstrong & Son.	27,000	40	30,000	40	1,200	46,000	1	6
A. A. Hutchinson & Bro.	27,000	15	9,000	30	900	40,000	1	4
Cochran & Strickler.	6,650	5	2,500	14	420	15,000	—	3

TABLE NO. 3 OF COKERIES ON MT. PLEASANT BRANCH OF P. & C. RAILROAD,
SHOWING:

Firm.	Coal Acres.	No. Rail Cars.	Value.	Miles Pit Track.	Coke Ovens.	Value.
Wm. Duncan & Bro.	140	—	—	1	28	\$ 7,000
Wm. L. Mullen.	100	—	—	1½	80	20,000
Boyle & Hazlett.	80	—	—	2½	100	25,000
Boyle & Hazlett.	120	—	—	1½	80	20,000
John T. Stauffer.	80	—	—	¾	20	5,000
Cochran & Ewing.	110	—	—	1¼	63	15,750
J. T. Overholt.	40	—	—	1	120	30,000
Markle & Co.	130	—	—	2	70	17,500
J. Stauff & Co.	90	—	—	1¼	18	4,500
Israel Painter.	120	—	—	1	70	17,500
A. S. R. Overholt & Co.	180	—	—	1½	62	15,500
J. P. Stauffer & Co.	80	—	—	1	40	10,000
Imhsen, Lake & Co.	110	—	—	1¼	50	12,500
W. A. Kiefer & Co.	30	—	—	1	12	3,000
Morgan & Co.	600	160	\$96,000	3	111	27,700
Strickler & Lane.	55	—	—	1½	44	11,000
Markle, Sherrick & Co.	125	45	27,000	2½	80	20,000
Hurst, Moore & Co.	100	—	—	1	101	25,250
C. H. Armstrong & Son.	80	30	18,000	2	63	15,750
A. A. Hutchinson & Bro.	140	25	15,000	3	80	20,000
Cochran & Strickler.	48	—	—	1½	35	8,750
Laughlin & Co.	—	—	—	—	—	—

TABLE NO. 1 OF COKERIES ON SOUTH-WEST R. R. BRANCH, P. & C. R. R.

SHOWING:

Firm.	Estab-lished	By.	Post Office.	Men.	Bush. Coke. Yearly.
Dillinger, Sherrick & Co	1873	Dillinger, Sherrick & Co	Pittsb'gh.	50	1,632,000
Dillinger, Suttle & Co.	1873	Dillinger, Suttle & Co.	Pittsb'gh.	30	828,000

TABLE NO. 2 OF COKERIES ON SOUTH-WEST R. R. BRANCH, P. & C. R. R.

SHOWING:

Firm.	Wages.	Houses.	Value.	No. Pit Cars.	Value.	Other Im- provement's.	Horses.	Mules.
Dillinger, Sherrick & Co.	\$24,500	16	\$5,000	18	\$540	\$7,000	4	3
Dillinger, Suttle & Co. .	13,500	—	—	12	360	5,000	—	4

TABLE NO. 3 OF COKERIES ON SOUTH-WEST R. R. BRANCH, P. & C. R. R.

SHOWING :

Firm.	Acres of Coal.	Miles of Pit Track.	Coke Ovens.	Value.
Dillinger, Sherrick & Co.	140	2	70	\$17,500
Dillinger, Suttle & Co.	90	2	41	10,250

TABLE NO. 1 OF COLLIERIES ON YOUGHIOGHENY RIVER,

SHOWING :

Firm.	Estab'd.	By.	Post Office.	Men.	Bush. of Coal Yearly.
James O'Neal, . . .	1865	James O'Neal, . . .	McKeesport, .	100	1,000,000
John Penny, . . .	1848	John Penny, . . .	McKeesport, .	140	700,000*

*Also 50,000 bushels of coke—eight coke ovens.

TABLE NO. 2 OF COLLIERIES ON YOUGHIOGHENY RIVER,

SHOWING :

Firm.	Wages.	Houses.	Value.	Pit Cars.	Value.	Improve- ments.	Acres.
James O'Neal,	\$56,000	14	\$11,200	130	\$3,900	\$166,000	225
John Penny,	56,000	29	6,000	110	3,300	25,000	50

TABLE NO. 3 OF COLLIERIES ON YOUGHIOGHENY RIVER,

SHOWING :

Firm.	Barges.	Value.	Flats.	Value.	Miles Pit Track	Horses.	Mules	Tow boats.	Value.
James O'Neal,	4	\$ 3,200	10	\$4,000	2	2	10	—	—
John Penny,	25	20,000	4	1,200	3	6	12	1	\$20,000

TABLE NO. 1 OF COLLIERIES ON PITTSBURGH & CONNELLSVILLE R. R.

SHOWING :

Firm.	Estab'd.	Who By.	Post Office.	Men.	Bush. Coal Yearly.
Youghiogeny } Nat. Coal Co. }	1863	Blackburn & Co.	West Newton,	50	1,560,000
Waverly Coal Co.	1863	Waverly Coal Co.	Pittsburgh,	—*	700,000
Heath & White, .	1872	Heath & White, .	West Newton,	100	1,300,000
Penn Gas Coal Co.	1857	Penn Gas Coal Co.	Irwin Sta'n, P.R.R.	—	4,000,000
Thos Moore, . .	1863	Thos. Moore, . .	Pittsburgh,	—*	4,000,000
C. H. Armstrong } & Sons, . . }	1862	C. H. A. & Sons,	"	275	2,400,000
Wm. H. Brown, .	1863	{ Duncan, Con- }	"	250	4,500,000
Youghiogeny } C. & Coke Co. }	1863	nell & Co. }	"	—*	2,400,000
N. J. Bigley, . .	—	Y. C. & C. Co. .	"	—	—
		N. J. Bigley, . .	"	—	—

*In cokeries.

TABLE NO. 2 OF COLLIERIES ON PITTSBURGH & CONNELLSVILLE R. R.

SHOWING :

Firm.	Wages.	Houses	Value.	Pit Cars.	Value.	Improvements.	Acres. Coal.	Horses	Mules.	Pit Track
Youghiogeny } Nat. Coal Co. }	\$ 22,500	9	\$ 2,700	25	\$ 750	\$75,000	460	—	3	$\frac{3}{4}$
Waverly Coal Co.	—*	—	—	—	—	—	—	—	—	—
Heath & White, .	45,000	—	—	50	1,500	30,000	300	—	6	$\frac{1}{2}$
Thos. Moore, . .	—*	—	—	—	—	—	—	—	—	—
C. H. Armstrong } & Sons, . . }	123,000	65	52,000	110	3,300	75,000	130	4	8	10
W. H. Brown, . .	111,500	40	16,000	200	6,000	50,000	299	4	11	—
Youghiogeny } C. & Coke Co. }	—*	—	—	—	—	—	—	—	—	—
N. J. Bigley, . .	—*	—	—	—	—	—	—	—	—	—
Penn Gas Coal Co.	—	22	22,000	85	2,550	60,000†	2,500	2	15	4

*In cokeries. †Have in addition 14 miles of T track, \$50,000; one locomotive and passenger car, \$15,000; 225 railroad freight cars, \$135,000.

From these tables it would appear that there are in this division of the Pittsburgh coal trade, forty-eight cokeries. This coke is principally shipped to western points, although some is transported to the East, and a portion consumed at home.

The following tables give the collieries on the line of the Pennsylvania Railroad, as far out as Irwin's station, which works may properly be classed in the coal trade of Pittsburgh:

TABLE NO. 1 OF COLLIERIES ON THE PENNSYLVANIA RAIL ROAD,
SHOWING:

Firm.	Estab- lished.	Who By.	Post Office.	Men.	Bushels Mined in a Year.
Braddocksfeld G.C.Co	—	Huntsman & Miller.	—	80	1,000,000
Penn Gas Coal Co.*	1857	Seanor & Robinson.	Irwin Station	1,100	13,000,000
Shafton Gas Coal Co.	1854	Wm. B. Hays.	"	100	1,300,000
Westmoreland Gas Coal Co.**	1854	{ Westmoreland G. C. Co. }	"	629	13,000,000
Carnegie & Co.†	1871	Carnegie & Co.	Larimer Sta.	60	—
New York & Cleve- land Gas C. Co.†	1872	N. Y. C. G. Co.	89 Wood st.	700	13,000,000

*7 mines and 8 engines

**8 mines, 3 engines, 1 locomotive.

†7 mines, 2 locomotives.

‡Cokery, making coke from slack by patent process.

TABLE NO. 2 OF COLLIERIES ON THE PENNSYLVANIA RAILROAD,
SHOWING:

Firm.	Wages Paid.	Houses.	Value.	Pit Cars.	Value.	Improve- ments.	Horses.	Mules.
Braddocksfeld Gas Coal Co.	36,000	10	3,000	60	1,800	—	1	15
Penn Gas Coal Co.	500,000	200	100,000	600	18,000	200,000	15	80
Shafton Gas Coal Co.	50,000	50	20,800	80	2,400	20,000	1	6
Westmoreland Gas Coal Co.	500,000	200	100,000	700	21,000	200,000	10	90
Carnegie & Co.	25,000	5	2,500	40	1,200	95,000	—	5
N. Y. & Cleveland Gas Coal Co.	400,000	20	10,000	425	12,750	300,000	—	65

TABLE NO. 3 OF COLLIERIES ON PENNSYLVANIA RAIL ROAD.

Firm.	Acres of Coal.	No. of R. R. Cars.	Value.	Miles Pit Track	R. R. Side Track	Value.
Braddocksfeld Gas Coal Co.	5	81	\$ 32,500	6	—	—
Penn Gas Coal Co.	4,500	1,000	600,000	35	10	\$100,000
Shafton Gas Coal Co.	400	125	75,000	3	$\frac{3}{4}$	15,000
Westmoreland Gas Coal Co.	9,000	1,200	720,000	45	$12\frac{1}{2}$	100,000
Carnegie & Co.*	17	—	—	$\frac{1}{8}$	$\frac{1}{8}$	400
New York & Cleveland Gas Coal Co.	1,700	315	167,400	65	4	40,000

*120 Coke ovens of a value of \$30,000, producing 1,500,000 bushels coke.

A fifth division of the collieries of the Pittsburgh coal trade lies along the Allegheny Valley Railroad, and are as follows:

TABLE NO. 1 OF COLLIERIES ON THE ALLEGHENY RIVER.

SHOWING:

Firm.	Estab- lished.	Who By.	Post Office.	Men.	Bush. Mined in a Year.
Armstrong, Dickson & Co.	1863	Armstrong & Co. .	Pittsburgh. .	150	1,800,000
P. Y. Hite.	1858	H. P. Hite.	Tarentum. .	75	1,000,000
Etna & Vesuvius.* . .	—	Spang & Co. . . .	Pittsburgh. .	70	1,350,000
Mahoning Coal Co. . .	1873	Mahoning Coal Co.	376 Penn st.	75	1,003,280
Loyal Hanna C. & Coke Co.	1873	Loyal Hanna C.&C.Co	376 Penn st.	180	3,900,000

* Worked jointly by those two rolling mills for their own supply.

TABLE NO. 2 OF COLLIERIES ON THE ALLEGHENY RIVER.

SHOWING

Firm.	Wages.	Houses.	Value.	Pit Cars.	Value.	Improve- ments.	Horses	Mules.
Armstrong, Dickson & Co. .	\$50,000	25	\$ 7,500	175	\$5,250	\$60,000	—	20
P. Y. Hite,	40,000	35	17,500	45	1,350	20,000	—	9
Etna & Vesuvius,	45,000	12	6,000	70	2,100	—	16	6
Mahoning Coal Co.	35,000	30	15,000	50	1,500	30,000	15	—
Loyal Hanna Coal & Coke Co.	80,000	25	20,000	100	3,000	25,000	—	—

TABLE NO. 3 OF COLLIERIES ON THE ALLEGHENY RIVER.

SHOWING:

Firm.	Acres of Coal.	No. of R. R. Cars.	Value.	Miles Pit Track.	Locomo- tives.
Armstrong, Dickson & Co.	300	67	\$134,000	7	3
P. Y. Hite,	550	78	25,000	2	—
Etna & Vesuvius,	325	36	12,600	3	—
Mahoning Coal Co.	600	—	—	2	—
Loyal Hanna Coal & Coke Co.* . .	1200	—	—	2	—

*100 Coke Ovens, of a value of \$25,000, producing 1,800,000 bushels coke a year.

In addition to these distinct divisions of the coal trade, the works of which are beyond the city, there are a number of others whose collieries are within the limits of the corporate city. Those are shown in the subjoined table.

TABLE NO. 1 OF COLLIERIES AND COKERIES IN AND AROUND THE CITY OF PITTSBURGH,
SHOWING :

Firm.	Estab'd.	By.	Location.	Men.	Bush. mined yearly.
Keeling & Co. . . .	1861	Keeling & Co. . . .	25th & Jos'ine	490	5,000,000
Gray & Bell, . . .	1853	A. Carnahan, . . .	35th ward. .	80	1,250,000
Gray & Bell, . . .	1857	A. K. Lewis, . . .	35th ward, .	100	1,250,000
Gray & Bell, . . .	1866	Wm. Chess, . . .	35th ward, .	145	1,000,000
Hartley & Marshall,	1851	{ Little Saw Mill } R. R. Co.	36th ward, .	100	1,000,000
Wettengle & Gormly	1870	Wettengle & Gormly	34th ward, .	75	1,000,000
Jas. Lindsay & Co.	1873	Jas. Lindsay & Co.	6 Wood st. .	15	400,000
Jones & Laughlins,*	—	—	—	—	—
C. H. Armstrong, Jr.,	1856	John McClaren, .	—	35	—†
C. H. Armstrong & Son	1864	C. H. Armstrong, .	—	14	—†
Castle Shannon R. R.	1871	Castle Shannon R. R.	89 Wood st.	400	4,000,000
John Stacy & Co. .	1852	Wm. York, . . .	36th ward, .	12	260,000†
Peter Moul, . . .	1856	G. & L. Moul, . .	Allegheny, .	15	500,000†

*Mine for use of American Rolling Mills only. Amount included in consumption of coal by Rolling Mills. †See Table No. 3. ‡Coke.

TABLE NO. 2 OF COLLIERIES AND COKERIES IN AND AROUND PITTSBURGH,
SHOWING :

Firm.	Wages.	Houses.	Value.	Pit Cars.	Value.	Improvements.	Horses.	Mules.
Keeling & Co.	\$140,000	40	\$20,000	500	\$15,000	\$30,000	50	50
Gray & Bell.	60,000	—	—	75	2,250	20,000	—	8
Gray & Bell.	60,000	6	3,600	80	2,400	130,000	—	7
Gray & Bell.	51,000	30	11,250	230	6,900	100,000	11	10
Hartley & Marshall. . .	25,000	35	14,000	100	3,000	4,000	—	5
Wettengle & Gormly. . .	24,000	—	—	35	1,050	7,000	48	12
James Lindsay & Co. . .	9,000	2	1,000	10	300	2,000	3	1
C. H. Armstrong, Jr., . .	20,000	15	6,000	—	—	9,000	3	26
C. H. Armstrong & Son, .	10,000	—	—	—	—	7,000	3	3
Castle Shannon R. R. . .	200,000	—	—	500	20,000	226,934*	10	56
Jno. Stacy & Co.	2,100	1	200	2	60	—	7	—
Peter Moul.	7,500	—	—	—	—	—	22	—

*Includes 8 miles railroad, 2 incline planes and 2 tunnels.

TABLE NO. 3 OF COLLIERIES AND COKERIES IN AND AROUND PITTSBURGH.

SHOWING :

Firm.	Acres of Coal.	No. R. R. Cars.	Value.	Miles Pit Track	Loco-motives	Coke Ovens.	Bushels 'Coke.
Keeling & Co.	430	—	—	10	3*	8	80,000
Gray & Bell,	400	—	—	3	2	—	—
Gray & Bell,	40	60	\$12,000	3	—	—	—
Gray & Bell,	200	—	—	3	—	12	300,000
Hartley & Marshall,	150	—	—	4	—	—	—
Wettengle & Gormly,	150	—	—	9	—	—	—
James Lindsay & Co.	50	—	—	3	—	—	—
OVENS							
C. H. Armstrong, Jr.	—	52	13,000	—	—	—	1000,000
C. H. Armstrong & Son,	—	28	7,000	—	—	—	600,000
Castle Shannon R. R.	920	—	—	12	6	—	—
Jno. Stacy & Co.	—	16	4,000	—	—	—	—
Peter Moul,	—	28	6,000	—	—	—	—

*1 Towboat, \$15,000; 48 Barges, \$40,000; 1 Flat.

From these tables it would appear that the coal trade is naturally divided into six distinct divisions. While its centre is Pittsburgh, it extends along the Monongahela sixty miles, up the Youghiogheny about the same distance, along the Pittsburgh, Cin. & St. Louis Rail Road twenty-two miles, out the Pennsylvania Rail Road twenty miles, and up the Allegheny Valley Rail Road about the same distance. In this reach in five different directions in the mining of coal the force of that centrality of position previously mentioned is apparent. The entire reach is about one hundred and eighty miles, while the average distance is but only 36 miles, and in three divisions only 20 miles; and in all cases, in such lines of transportation that in all but the Monongahela river, the works can be reached from the Pittsburgh offices of the companies in about one hour's time, or less; and in that time likewise on half of the pools of the Monongahela. The totals of coal trade show thus in their respective divisions, only one of which, using the rivers for transportation, has tow boats and barges.

ON THE PENNSYLVANIA RAIL ROAD.

Total collieries,	6	Total acres,	15,622
" hands,	2,669	" wages,	\$1,511,000
" bushels mined,	41,000,000	" value coal,*	2,460,000
" pit wagons,	1,905	" " wagons,	51,105
" houses,	485	" " houses,	236,300
" horses and mules,	288	" " horses and mules, .	14,400
" R. R. cars, 4 and 8 wheels, .	2,721	" " R. R. cars,	1,594,900
" value, except land,	\$2,697,765	" " other improve's, .	815,000
" miles of pit track,	154	" " pit track,	—

*At 6 cents per bushel.

ON THE ALLEGHENY VALLEY RAIL ROAD.

Total collieries,	3	Total acres,	3,275
" hands,	550	" wages,	\$250,000
" bush. mined,	9,053,280	" value coal,*	543,196
" pit wagons,	440	" " pit wagons,	13,200
" houses,	127	" " houses,	66,000
" horses and mules,	66	" " horses and mules,	3,300
" R. R. cars, 4 & 8 wheel,	181	" " R. R. cars,	171,600
" miles of pit track,	16	" " pit track,	—
" value prop., except land, \$388,500		" " improvements,	13,500

*At 6 cents per bushel.

ON PITTSBURGH & CONNELLSVILLE (B. & O. R. R.) R. R. AND BRANCHES.

Total collieries and cokeries,	52	Total acres,	3,689
" hands,	4,171	" wages,	\$1,824,752
" bushels coal mined,	22,560,000	" value coal,*	1,253,600
" pit wagons,	2,399	" " pit wagons,	69,570
" houses,	1,108	" " houses,	597,550
" horses and mules,	326	" " horses and mules,	53,900
" R. R. cars, 8 & 4 wheel,	928	" " R. R. cars,	700,400
" coke ovens,	3,245	" " coke ovens,	826,200
" bush. coke,	70,930,850	" " coke,†	3,516,542
" miles pit track,	110	" " pit track,	—
Value property, except land, \$4,158,010		" " improvements.	1,947,590

*At 6 cents per bushel.

†At 5 cents per bushel.

ON PITTSBURGH, CINCINNATI & ST. LOUIS RAILROAD.

Total collieries,	12	Total acres,	4,572
" coke ovens,	51	" value ovens,	\$ 10,650
" hands,	1,849	" wages,	717,000
" bushels mined,	16,290,000	" value coal,*	1,303,200
" pit wagons,	1,541	" " pit wagons,	46,230
" houses,	219	" " houses,	98,100
" R. R. cars, 4 and 8 wheel,	1,072	" " R. R. cars,	364,800
" horses and mules,	190	" " horses and mules,	9,500
" miles of pit track,	53	" " pit track,	—
" value, except land,	\$885,130	" " improvements,	366,500

*At 6 cents per bushel.

IN THE CITY OF PITTSBURGH.

Total collieries,	11	Total acres,	2,340
" hands,	1,031	" wages,	\$ 588,600
" bushels mined,	15,660,000	" value coal,*	1,096,200
" pit wagons,	1,552	" " pit wagons,	50,900
" houses,	113	" " houses,	50,050
" R. R. cars, 4 to 8 wheel,	60	" " R. R. cars,	12,000
" horses and mules,	300	" " horses and mules,	15,000
" miles pit track,	47	" " improvements,	517,934
" value prop., except land, \$648,884			

*At 7 cents per bushel.

ON THE MONONGAHELA RIVER.

Total collieries,	74	Total acres,	17,247
" hands,	6,359	" wages,	\$2,843,200
" bushels mined,	69,663,946	" value coal,*	4,876,475
" pit wagons,	6,539	" " pit wagons,	196,176
" houses,	1,846	" " houses,	784,350
" horses and mules,	558	" " horses and mules,	27,900
" miles pit track,	196	" " pit track,	—
" tow-boats,	54	" " tow-boats,	884,500
" barges,	1,006	" " barges,	785,180
" flats,	564	" " flats,	176,700
" value property, except land,	\$4,698,006	" " improvements, \$11,843,200	

*At 7 cents per bushel.

ON ALL DIVISIONS.

Total collieries,	158	Total acres,	46,745*
" hands,	16,629	" wages,	\$ 7,704,550
" bushels mined,	176,227,220	" value coal,	11,302,071
" pit wagons,	14,296	" " pit wagons,	426,021
" houses,	3,898	" " houses,	1,832,350
" horses and mules,	1,764	" " horses and mules,	124,000
" R. R. cars,	4,992	" " R. R. cars,	2,843,700
" towboats,	54	" " tow-boats,	884,500
" barges,	1,006	" " barges,	785,400
" flats,	564	" " flats,	176,700
" miles pit track,	576	" " track,	—
" value property, except land,	\$13,498,495	" " improvements,	5,503,733

*The acres of coal remaining belong to collieries out of which coal has not been taken.

CHAPTER XIV.

THE IRON WORKS OF PITTSBURGH.

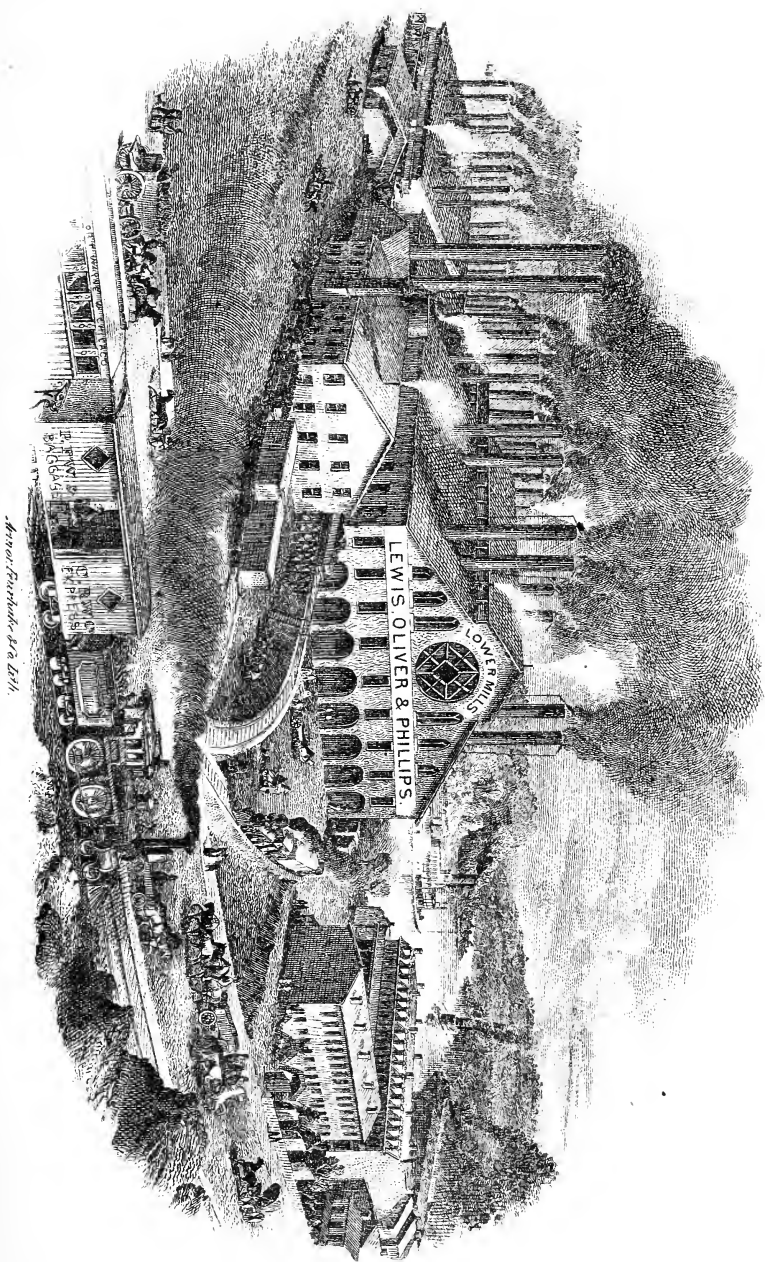
Although the consumption of iron enters into all the business of Pittsburgh, yet by her iron manufactures are generally understood the products of her rolling mills, her foundries and her machine shops.

While the knowledge and use of iron is very ancient, the scale of its manufacture was, up to the days of Homer, of so small an extent, that at the games in honor of Patrocles, the most precious prize was a piece of iron which a single man could throw. And it is recorded that when Porus came from the East, from the land of gold and of pearls, to propitiate Alexander the Great, his most valuable gift was a piece of Indian iron weighing forty pounds.

It is thought the crusaders brought back with them a knowledge of manufacturing cast iron. but although that knowledge was early put to use in Europe, yet the progress was so slow that in 1740, only 136 years ago, the whole production of England was made from fifty-nine furnaces, averaging 249 tons each, or a value of 17,350 tons. In 1856 it was calculated by Abram S. Hewitt, that the consumption of iron was

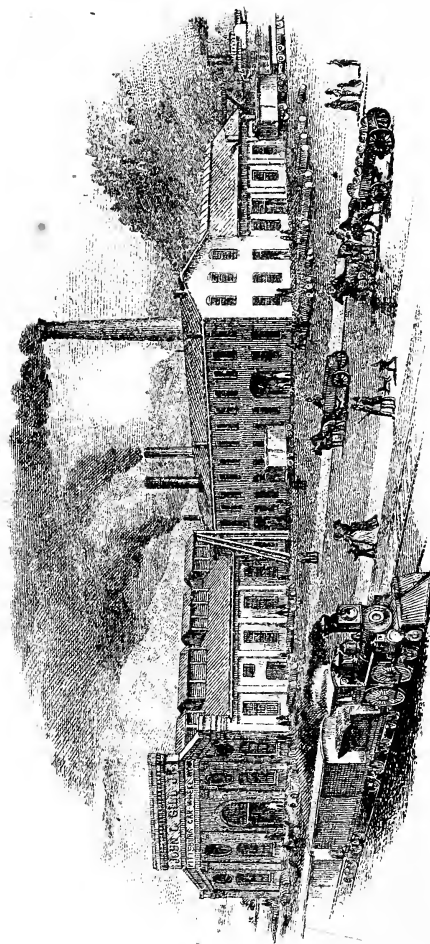
Nations.	Production per head.	Consumpt'n per head.	Nations.	Production per head.	Consumpt'n per head.
England, . . .	287 lbs.	140 lbs.	Russia, . . .	10 lbs.	10 lbs.
United States, .	84 "	117 "	Switzerland, .	00 "	22 "
France, . . .	40 "	60 "	Prussia, . . .	50 "	50 "
Sweden & Norway,	92 "	30 "	Germany, Zollverein,	50 "	50 "
Belgium, . . .	136 "	70 "	Spain, . . .	4½ "	5 "
Austria, . . .	12½ "	15 "			

The same authority computes that from the ratio of increase in 115 years, during which time it increased seventeen fold, the next century would show a demand requiring an annual make of 140,000,000 tons. The consumption of iron is so rapidly increasing, that it requires shorter periods for the doubling of the production from a given date. In Great Britain, commencing at 1806, it required until 1824, or 18 years, to double the amount consumed at the former date. In 1836 it had again doubled, being only twelve years. In 1847, eleven years, it had doubled again; and in 1855, a period of eight years, it had reached 3,500,000 tons, being an increase of 1,500,000 tons in that time, at which rate it would double in ten years..



VIEW IN THE NINTH WARD OF THE CITY OF ALLEGHENY.

AT LEWIS, OLIVER & PHILLIPS' LOWER MILL.



VIEW ON FREEBLE AVENUE, CITY OF ALLEGHENY.

JOHN GILL, JR.'S, CAR WHEEL WORKS.

The following table, taken from a lecture by Abram S. Hewitt, gives the production of various countries, at the dates specified:

	Tons.		Tons.
England, . . . 1855 . . .	3,585,906	Prussia,	400,000
France, . . . 1845 . . .	650,000	Germany,	200,000
Belgium, . . . 1855 . . .	225,000	Elba and Italy,	72,000
Russia, . . . 1851 . . .	300,000	Spain,	27,000
Sweden, . . . 1852 . . .	157,000	Denmark and balance of Europe,	20,000
Norway, . . . 1855 . . .	22,500	United States, . . . 1856 . . .	1,000,000
Austria, . . . 1847 . . .	165,765		

In commenting upon the enormous production, stated by Mr. Hewitt, as required during the next century, the following language is used in "Pittsburgh As It Is," by Geo. H. Thurston, published in 1857:

"The question at once arises, where is the immense quantity to be made? To solve this question, there is a certain condition of things to be considered. First, is required an adequate supply of the raw materials; then a location of those materials that will enable them to be cheaply brought together; for as previously stated in other chapters of this volume, the value of raw material does not lay so much in what it is, but where it is. There must be cheap and extensive means for transportation to market, also a sufficiently populous country to render labor attainable at a reasonable cost; and likewise skill to manage such works as may be erected in an economical manner.

"All these requisites exist in the western and eastern iron counties of which Pittsburgh is the focus; and it is obvious that in the solving of the question, of from whence will come the immense increase required by the calculation of Mr. Hewitt, that the section of country mentioned must aid largely in supplying any such demand; and that Pittsburgh will consequently increase wonderfully in furnishing her quota of the demand."

The following is, as nearly as can be ascertained, the world's total production of iron in 1871:

Great Britain,	6,500,000 tons	Norway and Sweden,	280,000 tons
United States,	1,912,000 "	Russia,	330,000 "
France,	1,350,000 "	Italy,	75,000 "
German Zollverein,	1,250,000 "	Spain,	72,000 "
Belgium,	896,000 "	Other countries,	200,000 "
Austria,	450,000 "	Total,	13,315,000 tons

In 1873 the production of iron in the United States had risen to 2,700,000 tons. In 1876 there were in the United States 713 furnaces, with annual capacity of 5,439,230 tons. There were 332 iron rolling mills whose capacity was 4,189,760 tons, having 4,475 puddling furnaces. In 1876 Pittsburgh has 11 furnaces, having a capacity of 236,992 tons, or nearly one-twentieth of the entire product of the country in 1873, and one-fifty-sixth of the entire production of iron in the world in 1871. The following table presents the furnaces and details of size and capacity:

Furnace.	Owners.	Stacks.	Ft. High	Ft. Bosh	Built.	Capacity.
Clinton, . . .	Graff, Bennett & Co.	1	45	12	1859	12,000
Eliza,	Laughlins & Co.	2	60	17	1861	36,000
Superior, . .	Harbaugh, Mathias & Owens,	2	45	12	1863	22,000
Shoenberger,	Shoenberger, Blair & Co.	2	62	13	1865	28,000
Isabella, . . .	Isabella Furnace Co.	1	75	18	1872	75,712
"	" " " "	1	75	20	1872	
Lucy,	{ Lucy Furnace Co. Carnegie Brothers, owners, }	1	75	20	1872	41,280
Soho,	Moorhead, McCleane & Co.	1	65	19	1872	22,000

These furnaces, in full operation, will employ in the various labors required at the furnaces, 1,000 hands, whose wages will average annually about \$550,000. They will use, running at full capacity, 11,894,600 bushels of coke. The quantity of ore used depending, of course, on its per cent. of yield, must vary, and admits of no fixed statistics being given.

In 1876 there is in Pittsburgh thirty-three *iron* rolling mills, *not to include eight steel rolling mills*, with seven hundred and sixty-four puddling furnaces, and an annual capacity of four hundred and fifty thousand net tons, equal to one-ninth of the whole capacity of all the mills in the United States, more than one-sixth of all the puddling furnaces, and one-tenth of all the iron rolling mills in the country. From these statistics it would appear that the prediction of 1857, just quoted from "Pittsburgh As It Is," has been largely fulfilled. Is it venturing much to repeat the prediction? The same elements upon which it was based in 1857, still exist,—and may not the following sentence from the same publication be quoted as applicable to the future, as well as the past.

"It has been stated that the future millionaires of America will be found among the iron and coal mines of Pennsylvania. That they will be found among the rolling mills, the foundries, the machine shops and the coal companies of Pittsburgh, there can be no doubt."

A reference to the various chapters treating in this volume of those requisites, supply of raw material, facility in its concentration, for manufacturing and for distribution, will at once convince how, by nature, the location of Pittsburgh is adapted for the focus of a huge manufacturing district, and how skillfully the cunning hand of man is improving it by railroads, and by rendering yet more available the rivers.

Says the author of "Pittsburgh As It Is," in 1857:

"In the rapid increase of consumption of iron, a point will be reached in which the natural resources of Great Britain in material and labor will be overtasked, when, the probabilities are, the United States will come into an equal if not superior position as a supplier of iron to the world.

"The price of coal and iron stone has doubled in Great Britain in the last three years, and the price of labor has materially increased. This single fact is indicative of the approach of that point at which the United States will take rank above all other nations as a supplier of iron. Of which assertion, the fact

that her ores and her coal strata are of sufficient extent to enable her to produce 50,000,000 tons with the same drain on her natural resources as Great Britain can produce three and a half million, is conclusive."

The position which Pennsylvania would attain in such a state of trade is apparent from her 15,000 square miles of coal and the deposits of the various iron ores which accompany it in every direction; and the rank of Pittsburgh is easily deducible from the remarks and the data given in this and previous chapters. Great Britain had but 11,000 square miles of coal, as the basis of her manufacturing success and wealth.

The present sources from which Pittsburgh draws her supply of pig iron are nine: 1st. The products of her eleven home furnaces, whose capacity is, as before stated, now equal to one-twentieth of the whole of the United States. 2d. The Allegheny river region. 3d. The Anthracite region. 4th. From the celebrated Juniata section of ores. 5th. From Eastern Ohio. 6th. From Missouri and Lake Superior. 7th. From the Hanging Rock region of Ohio. 8th. From Kentucky and Tennessee. 9th. From the Youghiogeny region.

Research *may* discover localities where greater natural facilities for the production of iron exists than here. Be that as it may, *at present there is but one Pittsburgh*. It is not probable there will be readily found the same facility for the distribution of manufactured iron, together with the ability to receive cheaply all the valuable ores and metal of the country; combined with quantity and quality of fuel; all augmented in their value by the large masses of not only permanently located skilled labor, but skilled masters and judiciously expended capital. As yet no geological examination has shown the same proximity of good ores and proper fuel; nor improvement developed the same natural and artificial receptive and distributive facilities held by the city of Pittsburgh.

Until such is the case Pittsburgh must remain the great iron market she always has been. Her large iron capital, consisting not only of money, but of mills, furnaces, ore banks, iron mountains, coal mines, gaseous fuel from natural gas wells, skill and experience as well, create every inducement of self interest, as well as furnish ability to meet all competition. They must, from the very commercial force embraced in such a multiform yet homogenous capital, control trade. Such huge aggregations of capital, natural advantages and productive ability, may, at times, meet trifling and temporary checks to their continuous progressive ratio; yet the very strength developed from their own internal force, gives irresistible power to their still increasing bulk, which aggregates continually. This is statistically true as to the history of Pittsburgh's progress. The statistics of her commerce and manufactures, when compared with the growth of the West, show it conclusively.

In 1800 the population of that section of the Western States to which Pittsburgh has access by her rivers then, and her rail roads also now, as well, was 385,647. In 1803 the value of the city's business was \$350,000, or 91.2 per cent. of the population which furnished her a market. Considering from that stand-

point of time the future progress of Pittsburgh business, the expectation that she would be able to maintain the same ratio of trade *per capita* as then, would seem reasonable and yet much to hope. Having at that time, without rivalries or competition, nearly one dollar of business *per capita* with the population of the market she controlled, it might have been perhaps by some thought somewhat sanguine, to expect that through all the growth of population in that market in coming years, under all the rivalries of other cities and manufacturing districts that must arise, in all the fluctuations of trade caused by local influences, that Pittsburgh should continue to hold a progress equal with that growth, and maintain a trade of equal *per capita* proportions as that with which, having no competition, she started. At that time the wonderful developments of the West was not conceived of. Could that development have been foreseen, and the great active ambitious communities that have arisen; the large development of mineral and rail road facilities been pre-known, it would have been thought yet more sanguine to hope the city would keep a trade equal to one dollar *per capita*, with all that great increase of population, through all the rivalries and competitions that would arise; and if she could so maintain the ratio, a future for the city to be contemplated with satisfaction. But little more could be asked than that a city should grow in trade in the same ratio of increase as that of her market, especially if competitions, foreign as well as home, for the trade of that market should not only arise, but increase, within the market itself, by reason of the market's own inherent facilities and growth.

As before stated, in 1800 the trade of Pittsburgh was equal to 91.2 per cent. of the population of the West. In 1810 the population of the South and West being 1,073,531, the business of Pittsburgh was by estimates then made \$1,000,000, or 93 per cent. In 1820 the census gives the population of the section designated, at 2,541,522, while in 1817 the business of Pittsburgh was stated at \$2,266,366, or a fraction short of 90 per cent. In 1830 there were in the same section of the Union, 3,331,298, but there is no record of the value of the business of the city at that date. In 1840 the population of the Western and South-western States was 5,173,949, and in 1836 the business of Pittsburgh had been shown to be \$31,146,559, being something over 600 per cent., or six dollars *per capita*, showing that the business of the city had not only kept pace in its original ratio with the population of the West, but compounded thereon five hundred per cent.

In 1850 the population of the West was 8,419,179, and the value of the business of Pittsburgh, given by authorities of that date, at \$50,000,000, or about the same ratio of six dollars per capita, as in 1840. In 1860 the population of the Western and Southern States under comparison, was 11,489,318. Of the value of business of the community for 1860, there is no reliable figures, the census of that year of Allegheny county having been greatly deficient in comprehensiveness. In 1856, however, a private compilation of the statistics of the city, published in "Pittsburgh As It Is," before cited, shows the manufactur-

ing and wholesale business to have been \$70,000,000, by which it is clear that the ratio of six dollars per capita was maintained at that date, and leaving it very probable that an increase thereon was attained in 1860. In 1870 the population of the section of the Union with whose increase the progress of the business of Pittsburgh is being compared, was 11,583,567,—but in that last decade the trade of Pittsburgh had largely found eastern as well as western markets, and the ratios of trade and inhabitants should be with eastern as well as western populations. That the past ratios with the west had been fully maintained, there is no doubt, as in a letter written in 1866, by Geo. H. Thurston, President of the Board of Trade of Pittsburgh, to Hon. J. K. Moorhead, M. C., correcting a statement growing out of the defective census of 1860, before referred to, that had been made in Congress, that the manufactures of Pittsburgh were but eleven millions, he says:

“From the returns made to the revenue officers here for a period of eighteen months, from September, 1863, to March, 1865, I give you the amount of the sales of *some* of the more important articles manufactured at Pittsburgh. These figures are not an exhaustive or elaborate report of the census of the manufactures of the city, but a condensation of *some* statistics of the sale of leading articles derived from internal revenue returns in my possession.”

Those returns make the sales of the few items in the period embraced, over seventy-four millions of dollars, and although but a limited exhibit of the productive capacity and actual yield of Pittsburgh of manufactures alone, they are more than ample to show that the ratios had not only been maintained, but also compounded, as at previous periods.

These statistics are sufficient to show what was previously stated of the power of Pittsburgh to maintain not only her trade in proportion to the increase of her original market, but to very largely compound thereon in the face of all competitions, checks and depressions of trade.

While active competitions now exist to wrest trade from Pittsburgh, especially in her iron and steel interests, yet we feel confident, from the present as well as the past of the iron trade of Pittsburgh, that she will not have in the future any more than now anything to fear from the iron mountains of Canada or Missouri, the iron deposits of Superior, the thick, rich ores of Tennessee and Georgia. Then, as now, they would, from facility of transportation, be hers as much as the fine ores of Ohio and Pennsylvania, while her growth in ability and increase in productive force will, as in the past, keep pace with the competition which draws her energies forth and calls upon her resources to maintain the mastery.

THE ROLLING MILLS OF PITTSBURGH ARE AS FOLLOWS:

Style of Works.	Style of Firm.	Office.	Estab- lished.	Who By.	Puddling Furnaces.	Heating Furnaces.	Trains Rolls.	Nail and Spike Mach's.	Capacity. Tons.
Sligo, . . .	Phillips, Nimick & Co.	Carson, near Bridge,	1825	Stewart & Lyon, . . .	27	10	5½	—	16,000
Junietta, . . .	Shoenberger & Co. . .	15th and Etna sts.	1824	Peter Shoenberger, . . .	29	8	6	92	18,000
Etna,* . . .	Spang, Chalfant & Co.	66 Sandusky street,	1828	Bean, Butler & Belknap,	29	9	6	22	20,000
Sable, . . .	Zug & Co.	13th and Pike sts.	1828	Zebulion Packard, . . .	34	11	6	55	18,000
Kensington,†.	Henry Lloyd, Son & Co.	Second avenue,	1828	John O. McNickle, . . .	16	6	4	—	11,000
Wayne, . . .	Brown & Co.	10th & Duquesne W'y	1829	M. S. Mason,†.	28	4	5½	—	10,000
Pittsburgh, .	J. Painter & Sons, . .	96 Water street,	1836	Lorenz, Forsythe & Cuddy	52	15	13	—	24,000
Birmingham, .	McKnight & Co. . . .	In Bankruptcy.	1836	Hoge & Hartman, . . .	20	5	5	—	10,000
Anchor, . . .	Chess, Smythe & Co. .	112 Water street,	1842	Campbell & Chess, . . .	20	5	4	90||	6,000
Pennsylvania,	Everson, Macrum & Co.	Second avenue,	1844	Everson & Co.	14	8	5	—	6,000
Clinton, . . .	Graff, Bennett & Co. .	97 Water street,	1845	A. Plummer & Co. . . }	41	17	41	50	20,000
Milvale, . . .	" " " " " "	" " " " " "	—	—	—	—	—	—	—
Vesuvius, . .	Lewis, Dalzell & Co. .	66 Anderson street,	1845	Lewis, Dalzell & Co. . .	24	10	6	50	12,000
Iron City, . .	Rogers & Burchfield, .	In Bankruptcy,	1850	—	9	5	6	—	6,000
Eagle, . . .	Mullen & Maloney, . .	{ Duquesne Way }	1850	James Wood & Co. . . .	20	10	—	—	10,000
McKeesport, .	Wm. D. Wood & Co. . .	and Cecil alley,	1851	W. Dewees Wood, . . .	7	16	4	—	4,000
American, . .	Jones & Laughlins, . .	111 Water street,	1852	Jones, Lauth & Co. . . .	75	30	18	73	50,000
Glendon, . .	Dilworth, Porter & Co.	Third and Try sts.	1857	Porter Rolfe & Swett, . .	24	6	5	9¶	10,500
Soho, . . .	Moorhead & Co. . . .	Second avenue,	1859	Moorhead & Co.	11	6	5	—	10,200

*Originally run with water power.

†Originally called the Dowlass; rebuilt in 1845, by Freeman, Miller & Co.

‡Commonly called, from his initials, Manuscript Mason.

§2 Steam Hammers.

||Also 50 Tack Machines.

¶Spike Machines.

Style of Works.	Style of Firm.	Office.	Estab- lished.	By Who.	Puddling Furnaces.	Heating Furnaces.	Trains of Rolls.	Nail Machines.	Capacity. Tons.
Star. . . .	Lindsay & McCutcheon	98 Rebecca. . . .	1862	—	14	4	4	—	8,000
Fort Pitt. . . .	Reese, Graff & Woods.	Penn av. and 32d. . . .	1862	Reese, Graff & Dull. . . .	22	15	7	—	12,000
Ormsby. . . .	Byers, McCullough & Co	98 Water. . . .	1863	Byers, McCullough & Co	26	6	3	—	15,000
Union Forge & Iron Mills. }	Wharton Bros. & Co. . .	In assignment. . . .	1863	Wharton Bros. & Co. . .	20	5	4	—	14,000
Union Ir'n Mills	Wilson, Walker & Co.	29th and Railroad.	1861	Kloman & Phipps. . . .	15	6	5	—	9,000
Monongahela.	Carnegie Bros. & Co. . .	33d and Railroad . . .	1860	Kloman & Phipps. . . .	29	10	7	—	27,000
Allegheny. . . .	Lewis, Oliver & Phillips.	92 Water. . . .	1864	Lewis, Oliver & Phillips }	60	12	8	—	40,000
Pitts. Forge & Iron Co. }	Lewis, Oliver & Phillips.	91 Water. . . .	1866	Lewis, Oliver & Phillips }	15	7	3†	—	13,000
Pitts. Bolt W'ks	Pitts'gh Forge Iron Co.	Duquesne way and Cecil alley. . . .	1864	Pitts. Forge Iron Co. . .	24	7	6	—	15,000
Keystone. . . .	Pitts'gh Bolt Works Co	In bankruptcy. . . .	1864	Pitts. Bolt Works Co. . .	19	5	4	—	11,000
Superior. . . .	Glass, Neely & Co. . . .	In bankruptcy. . . .	1865	Glass, Neely & Co. . . .	—	—	—	—	6,000
Solar. . . .	Harbaugh, Mathias & Co	In bankruptcy. . . .	1865	—	17	5	5	—	—
Siberian. . . .	Wm. Clark & Co. . . .	35th and Railroad.	1869	Lewis, Clark & Co. . .	6	6	6	—	5,000
Scottsdale. . . .	Rodgers & Burchfield.	In bankruptcy. . . .	1872	Rodgers & Burchfield.	11	4	3	—	—
U. S. Iron & Tin Plate Works.	Everson, Macrum & Co. United States Iron & } TinPlate Co. . . . }	Second av. . . . Smithfield. . . .	1873	Everson, Macrum & Co.	6	3	6	—	—
			1873	By company. . . .					

†Three steam hammers.

These thirty-three iron rolling mills have, as will be seen from the table, seven hundred and sixty-four puddling furnaces, and the capacity of the mills for production is four hundred and fifty thousand tons, or as before stated equal to one-ninth of the whole capacity in the United States, and one-sixth of all the puddling furnaces. It is equal to one-fourth of all the mills of Pennsylvania, seventy per cent. of all the mills in Ohio, ninety-four per cent. of all the mills in the New England States, eighty per cent. of all the mills in New York and New Jersey combined, one hundred and twenty per cent. of all the mills in the seven States of Delaware, Maryland, Virginia, North Carolina, Georgia, Alabama and West Virginia, one hundred per cent. of all the mills in Kentucky, Illinois, Tennessee and Indiana, and two hundred and thirty per cent. of all the mills in the balance of the United States.

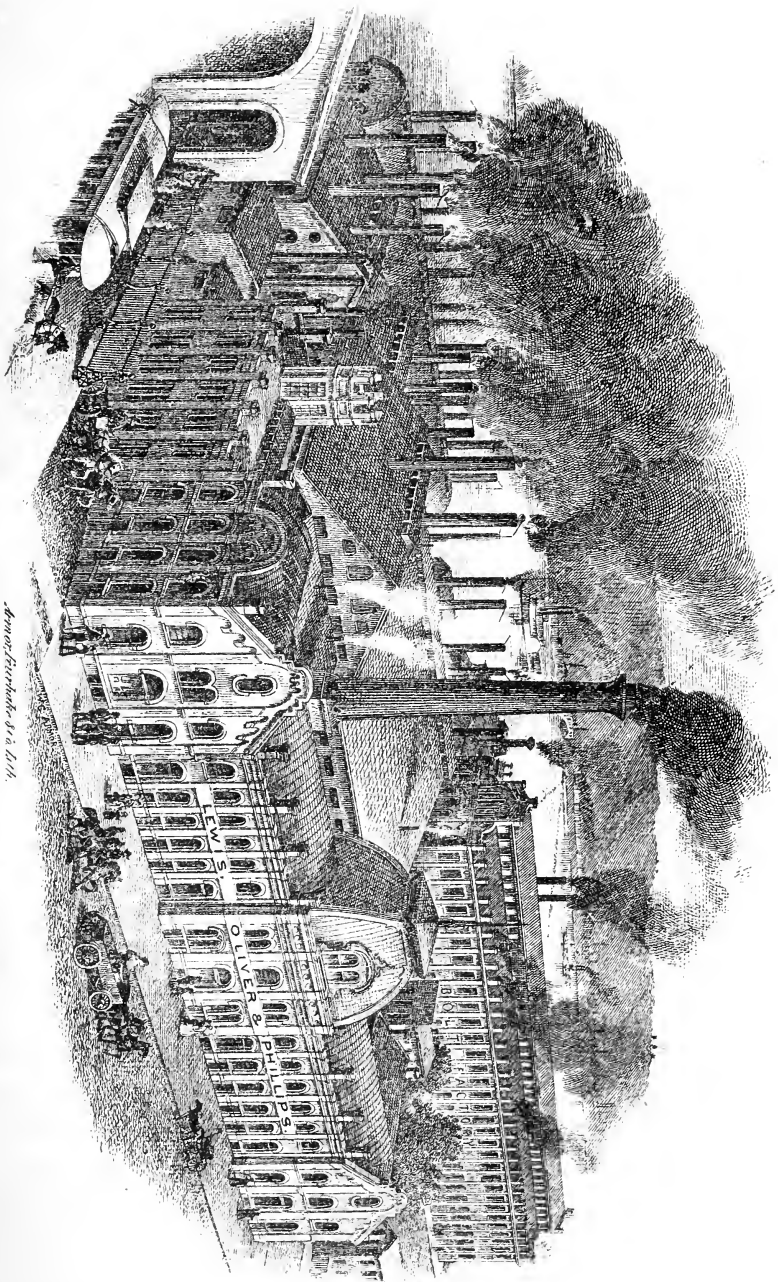
These thirty-three mills, running full, consume 385,000 tons of pig iron, besides scrap iron and blooms. They use 150,000 tons of ore for "fix," and 3,000,000 fire brick. They consume 2,400,000 bushels of coal, employ 10,148 hands, whose wages average \$6,560,000 annually. The capital in the buildings, machinery and ground is, as nearly as can be arrived at, \$9,681,667, and the area covered by the mills is 510 acres. They produce, when running full, about 350,000 tons of bar, sheet and plate iron, also about 1,200,000 kegs of nails.

The value of the product it is difficult to give, owing to the fluctuating rates of iron in the past two years, and a mere estimate, owing to the various qualities, descriptions, and rates for special orders, or peculiar makes, would be nothing reliable. From the amount of pig metal consumed, the value of the rolling mill product may be assumed at about twenty million of dollars at present rates.

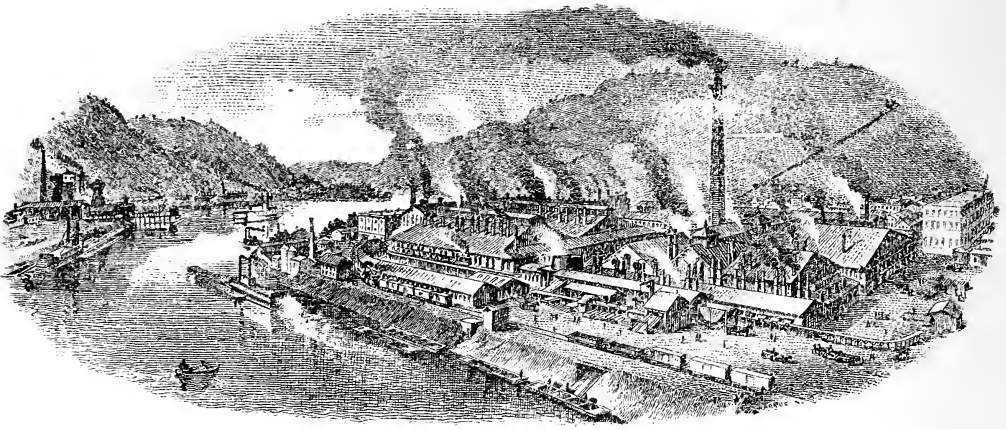
The iron produced by the McKeesport works is really a separate class of iron manufacture, being a special article made by only one mill, and known as

RUSSIA OR PLANISHED STEEL IRON.

The manufacture of this article was established in 1851 by W. Dewees Wood, the present proprietor, under a patent granted to James Wood, the grandfather of W. Dewees, in 1841, and under an improvement by J. Wood Brothers, in 1844. The imitation of Russia sheet iron then made by this establishment, although equal in appearance to the imported article, would not resist the action of the atmosphere as well. This difficulty was partially overcome in 1861 through experiments by the present proprietor of the works. Other improvements were patented in 1865-67, but the required result was not obtained until 1873, through the present mode of manufacture, the principle feature of which is planishing by hammers. The growth of this important branch of Pittsburgh's manufactures is the result of thirty years experimenting and study on the part of the inventor, and the effect is that Pittsburgh is the only point in the country where an article of planished sheet iron is produced fully equal to the best Russia iron, and so endorsed by the heaviest metal dealers and consumers in the country. In the growing indications that the United States will, within



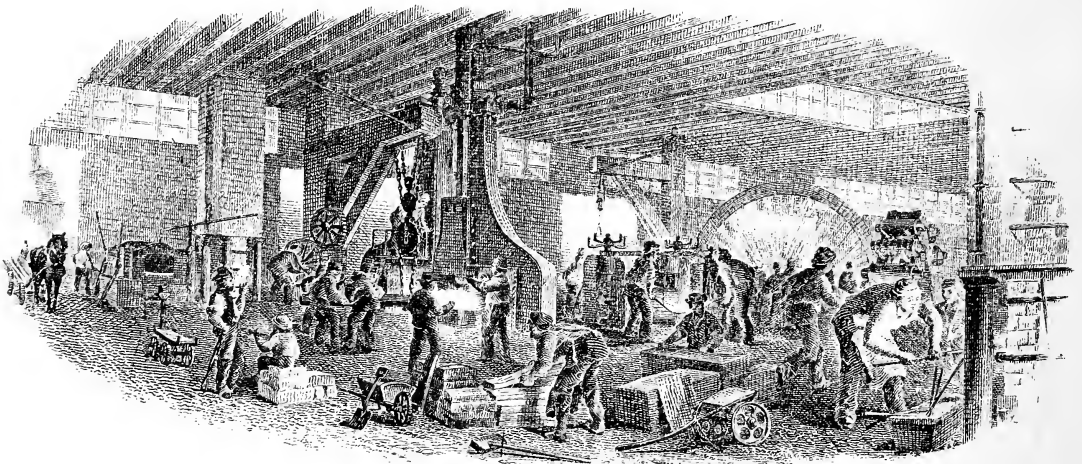
VIEW IN THE TWENTY-NINTH WARD OF THE CITY OF PITTSBURGH.
LEWIS, OLIVER & PHILLIPS' UPPER MILL.



By Geo. Fairbanks & Co. Lith.

BIRDS-EYE VIEW IN TWENTY-FOURTH WARD, FROM BLUFF STREET.

MONONGAHELA RIVER AND JONES & LAUGHLINS IRON WORKS.



By Geo. Fairbanks & Co. Lith.

INTERIOR VIEW OF A ROLLING MILL.

the near future, compete with her old creditor, England, this stride of a Pittsburgh manufactory toward freeing the country from a dependence on Russia for its planished iron, is important; especially in view of the facts previously set forth as to Pittsburgh's ability and power in the production of iron and her facility for reaching foreign markets. There is not a little grim humor in the trade mark which the firm producing this iron has adopted, of an eagle throttling a bear lying prostrate on its back.

The establishment covers about five acres of ground, employs 300 hands, paying out \$170,000 a year of wages. There is consumed in the works 5,000 tons pig and scrap iron and 600,000 bushels of coal, and four large steam hammers, weighing about three tons each and striking three hundred blows a minute, with a force of about twenty tons are used. The blows of these hammers imparts the peculiar gloss and dappled appearance of "Russia sheet," and closes the pores of the iron so effectually that it resists the action of the atmosphere fully as long.

This establishment fully illustrates the facilities of sites mentioned in the chapter on the manufacturing advantages of Pittsburgh. Located on the banks of the Monongahela river, a branch of the Pittsburgh division of the Baltimore & Ohio R. R. runs through the works, giving those great facilities of receiving and shipping by either rail or water, cited in that chapter; barges being frequently loaded at the works with iron for St. Louis. The product of the mill is about four thousand tons common Juniata and planished sheet iron.

There is among the specialties of iron products in Pittsburgh, the manufacture of IRON SPONGE, or deoxidized ore. This process is carried on by the Blair Iron and Steel Co., who use an open hearth, "Seimans-Martin" furnace, for making cast steel ingots; also a cupalo for the manufacture of the sponge, or cupalo metal, a new carbide of iron, intermediate in character between cast iron and cast steel, which is used as a stock for the manufacture of cast steel or iron in mixture with common pig. It was established in 1872, and is at present only in partial operation. When in full operation the establishment will employ 75 men, whose wages will amount to \$40,000 annually; the space occupied by the works is $2\frac{1}{2}$ acres, and the capital in machinery, buildings and grounds \$50,000.

COLD ROLLED POLISHED SHAFTING

Is also a special product of another of the rolling mills of Pittsburgh. This article is made at the American Works of JONES & LAUGHLINS, and has seventy-five per cent. more effective strength than the same size of turned iron, and is made no where else in the world but by this firm at Pittsburgh.

This shafting is rolled out in the ordinary way, hot, and after being scaled is rolled through ponderous chilled rolls, five feet long by twenty-four inches in diameter, which, while reducing the diameter of the shaft, gives it a bright polished surface. The power which must be expended to overcome the friction of cold rolled shafting, is less by thirty per cent. than is required to overcome the

friction of turned iron shafting of equal strength, and by its use thirty-five per cent. in weight and cost of shafting, hangers and couplings is saved. The buildings in which the shafting is manufactured is 600 by 200 feet, and about 200 hands are employed in its production. The invention was secured by patent in 1859.

HORSE AND MULE SHOES

Are another specialty of two other of the rolling mills, Messrs. Shoenberger & Co. and Reese, Graff & Woods.

Another of the rolling mills, that of LEWIS, OLIVER & PHILLIPS, manufacture very largely from their own iron what is technically termed HEAVY HARDWARE, making bolts, screw, hook, and strap and T hinges, harrow teeth, wrought bolster plates, nuts, washers, wagon hardware, etc., etc., in addition,—the statistics of which are embraced in those of the bolt and nut manufacturers.

FOUNDRIES AND MACHINE SHOPS.

Are the next in importance in the iron manufacture of Pittsburgh. The first foundry which was started in the western counties of Pennsylvania was Trumbull & Marmie's furnace, which was situated on Jacob's Creek, fifteen miles from its mouth, and went into blast on the first of November, 1790.

In 1803 the first iron foundry was established in Pittsburgh by Mr. Joseph McClurg. The growth of the foundry business in this city from that time was steady, and at periods rapid. It ranks second in the iron business of Pittsburgh in the amount of capital invested, extent of ground and buildings occupied, and number of hands employed. The variety of their staple castings is large; and there is no description of foundry work which the skill, facilities and resources of the firms engaged in the business does not justify them in undertaking. Heavy mill gearing, railroad castings, copper mining machinery, rolling mill castings, cotton and sugar mills and presses, cannon, plows, chilled wheels, shafts, machines for punching, drilling and planing iron, &c., &c., hollow ware, stoves, grates, platform and other varieties of scales, steam engine work, a long list of articles known as domestic hardware, and in fact every description of form which necessities and luxuries demand, are daily turned out from foundries located in this community.

In these foundries may be cast articles ranging from the heavy Columbiad, (cannon,) weighing 100,000 pounds, throwing a ball of 1000 pounds, to the finest Berlin work of articles not larger than a finger.

The casting of cannon is not at present being prosecuted. Although the Fort Pitt cannon foundry is at present not in use, it is an object of pride to Pittsburghers. Established in 1803, it has cast cannon for three wars in which the government of the United States has been involved. A portion of the guns used on the United States ships on Lake Erie, at Perry's victory, were cast at this establishment. Guns and shells were also cast for the use of our armies in the Mexican campaign; and during the rebellion, in addition to a large amount

of guns of the more ordinary calibre, this establishment made the largest guns in the world.

The foundry was originally located on the corner of Fifth avenue and Smithfield street, on the lot where now stands the Custom House, and was established by Joseph McClurg in 1803. In the seventy years of its existence its operations have been conducted by several firms, among which were Wade & Totten, Knap, Wade & Co., Knap, Rudd & Co., The Knap Fort Pitt Foundry Co., Chas. Knap, Esq., and Chas. Knap's Nephews.

Since 1849 there have been 2,408 cannon and mortars made in the establishment, of which number 2,038 were cast from 1861 to 1864.

The following table shows the number and size of the guns cast, together with their weight and the weight of the ball or shell carried by them.

The army guns of 8, 10, 15, 20 inch, are technically known as Columbiads.

No. of Guns.	Size of Bore.	Service designed for.	Weight each Gun.	Shot or Shell.	Weight each Ball.
600	9 inch.	Navy.	9,100 lbs.	Shell.	70 lbs.
10	10 "	"	16,800 "	Ball.	70 "
50	11 "	"	16,800 "	Shell.	130 "
58	15 "	"	43,900 "	Ball.	450 "
1	20 "	"	100,000 "	"	1,000 "
300	8 "	Army.	8,400 "	"	64 "
100	10 "	"	15,900 "	"	128 "
50	15 "	"	50,000 "	"	450 "
1	20 "	"	116,497 "	"	1,000 "
200	8 "	Howitzer.	— " "	Shell.	50 "
200	8 & 10 "	Mortars.	— " "	"	50 & 84 "
150	.18 "	"	— " "	"	200 "
150	4½ "	Rifle Guns.	— " "	Ball.	38 "

The balance 6 and 12 pounds.

The 15-inch army guns enumerated in the above table, are 17 feet 9 inches long; the navy guns 17 feet 5 inches long; and both descriptions 4 feet in diameter at the trunions.

During the continuation of the civil war, these works were continuously running, with the exception of Sundays, and in addition to the great number of guns turned out, 10,000,000 pounds of shot and shell. Many of the other foundries were also engaged in furnishing shot and shell.

A circumstantial history of each of the foundries, with however so brief mention of interesting matters connected with them, would occupy more space than it is convenient to devote to the whole iron business of Pittsburgh, and we content ourselves with simply exhibiting in tabular form the progress of the foundry business, from 1804 to 1867, showing the number of foundries, hands and tons of metal consumed.

Year.	Foundries and Machine Shops.	Hands.	Tons metal consumed.
1804,	1	—	—
1810,*	2	—	400
1815,†	3	—	—
1817,‡	4	87	—
1825,§	8	—	—
1829,|| . . . . .	9	225	3,500
1836,¶	18	1,000	12,000
1850,¶	30	—	20,000
1854,**	38	1,765	28,525
1857,††	33	1,625	34,000

In 1775 steam engines were first applied to the pumping of mines and the manufacture of iron; and in 1794, nineteen years after, the steam engine was assisting at Pittsburgh to build up that system of manufactures which has given her so wide a reputation.

The following table shows, to a certain extent, the increase of engine and manufacturing shops here from 1808 to 1837:

1808,	there was one Machinist and Whitesmith.
1813,	" were two Steam Engine Works.
"	" was one Wool Carding Machine Factory,
"	" " one Cloth Steam " "
1825,	" were six Steam Engine " Factories.
1829,	" " seven " " " "
1830,	" " 100 Steam Engines built.
1837,	" " 10 Steam Engine Factories.

The sources from whence to gather figures showing the progress of this branch of business are sparse; and in the absence of any information which will show satisfactorily the values of the steam engine and machine business at the various dates given above, we proceed to the business of the present day, only stating that in 1857 there were sixteen machine and steam engine manufactories in Pittsburgh, employing 737 hands, and producing steam engines to the value of \$836,300.

With the increase and growth of Pittsburgh in the past two decades, the foundry business, as a class, had gradually sub-divided itself until it is more properly shown in its various branches, which may be classified as general foundries, stove foundries, heavy machine foundries, light machine foundries, steam engines, machine shops with foundries, engine factories without foundries, engineers, iron founders, machinists, roll foundries, and malleable iron foundries; and there are in Pittsburgh the following

*Census, by U. S. Marshal.

†Directory of Pittsburgh, 1815.

‡Census taken by Councils.

**Charles McKnight, in Hunt's Magazine, 1854.

§ Pittsburgh Gazette.

|| Lyford's Western Directory.

¶ Fahnstock's Directory, 1850.

†† "Pittsburgh As It Is."

ROLL AND HEAVY MACHINE FOUNDRIES.

Style of Works.	Style of Firm.	Office.	Estab- lished.	Who by.	Cupalo.	Air Furnaces.	Tons Capacity.	Specialties.
Pittsburgh, . . .	A. Garrison & Co. . .	33 Wood st.	1803	Joseph McClurg,	1	2	10,000	Chilled rolls & heavy castings
—	J. L. Lewis,	10th st., s. s.	1863	Rossiter & Lewis,	1	1	3,600	Rolls.
Phoenix, . . .	Jas. B. Young & Co.	42d and R. R.	1861	Bollman & Co. .	1	2	9,000	Semi-steel Sand chill rolls.
Monongahela	Hay, Shinkle & Miller	39 Water st.	1848	S. S. Fowler & Co	1	—	—	{ Grist and saw mill work, turbine wheels.

ENGINEERS, IRON FOUNDRIES AND MACHINISTS.

Style of Works.	Style of Firm.	Estab- lished.	Who by.	Cupalo.	Air Furnaces.	Tons Capacity.	Specialties.
Washington,	Robinson, Rea & Co.	1836	Robinson & Minis.	1	1	12,000	{ Rolling mill machinery, marine and sta- tionary engines, heavy machinery.
Fulton, . . .	Totten & Co.	1855	Pennock & Hart,	3	1	12,000	{ Grooved chilled rolls, rolling mill machinery.

THE FOLLOWING GENERAL FOUNDRIES.

Style of Works.	Style of Firm.	Office.	Estab- lished.	Who By.	Cupalo.	Air Fur- aces.	Tons. Capacity.	
Berlin. . . .	W. G. Price & Co. . . .	27 Wood. . . .	1808	William Price. . . .	1	1	3,600	Miscel's Cast'gs
West Point. . . .	John Frissel. . . .	Penn and Second . . .	1848	C. Preston. . . .	1	1	800	Sad Irons.
Rosedale. . . .	L. Peterson, Jr., & Co. . . .	187 Liberty. . . .	1866	L. Peterson, Jr. & Co. . . .	1	1	3,000	General Cast'gs
Heckla. . . .	John Roney. . . .	20th street. . . .	1861	John Roney. . . .	2	1	3,000	" "
Mont Blanc. . . .	A. Tomlinson & Co. . . .	29th and Railroad. . . .	1869	A. Tomlinson & Co. . . .	1	1	3,000	" "
Iron City. . . .	Dickson, Marshall & Co. . . .	23d and Liberty. . . .	1863	Dickson, Marshall & Co. . . .	—	2	3,000	Heavy Castings
Birmingham. . . .	Fisher, Thomas & Co. . . .	21st and Mary. . . .	1863	Fisher, Wentzell & Co. . . .	—	1	1,500	General Cast'gs
—	Gibson & Riddle. . . .	181 Lacoek. . . .	1856	Hugh Wightman. . . .	—	1	1,000	" "
Rankin Manf. } Company. }	Rankin Manufact'g. Co. . . .	183 Lacoek. . . .	1874	Rankin Manufact'g Co. . . .	—	1	1,000	" "
—	Thos. Carline. . . .	188 Lacoek. . . .	1836	C. Kingsland. . . .	—	1	1,000	" "
—	Henry Freyvogle. . . .	5th av. and Madison. . . .	1876	H. Freyvogle. . . .	—	1	1,000	" "

STOVE FOUNDRIES.

Style of Works.	Style of Firm.	Office.	Estab- lished.	Who By.	Cupalo.	Tons. Capacity.	
—	Bissell & Co. . . .	235 Liberty. . . .	1827	Arthurs & Nicholson. . . .	1	4,500	{ Stoves, Ranges and Grate Fronts.
Union. . . .	Mitchell, Stevenson & Co. . . .	14th and Etna. . . .	1829	Thos. Mitchell. . . .	1	4,000	Stoves.
Bradley. . . .	A. Bradley & Co. . . .	Wood and Second av . . .	1836	A. & C. Bradley. . . .	1	4,500	" "
Lafayette. . . .	A. Anshutz. . . .	214 Liberty. . . .	1850	H. Anshutz & Co. . . .	1	1,000	Stoves.
—	Graff, Hugus & Co. . . .	206 Liberty. . . .	1844	—	1	3,000	{ Stoves, Grate Fr'ts, Ranges & Heaters.
Keystone. . . .	D. De Haven. . . .	22 Wood. . . .	1850	Eichbaum & McHenry. . . .	1	2,000	" "
Valley Stove. . . .	Wm. McKee. . . .	317 Liberty. . . .	1859	Allen, McCormick & Co. . . .	1	1,250	Stoves, Grate Fronts.
Stella. . . .	John B. Herron & Co. . . .	291 Liberty. . . .	1864	John B. Herron. . . .	1	1,200	Stoves.
Brushton Stove	McFarlane & Patterson. . . .	38 Wood. . . .	1874	I. G. McFarlane. . . .	1	3,000	Stoves and Heaters.

MALLEABLE IRON FOUNDRIES.

Style of Works.	Style of Firm.	Office.	Estab'd.	Who By.	Cupalos.	Air Furnaces.	Tons Capacity.	Specialties.
Eagle, .	McConway, Torley & Co.	25th & Liberty sts	1868	Lewis & Co. . . .	1	2	800	All descriptions of small castings
Artizan,	Kinzer & Jones, . .	27 Penn avenue,	1870	Kinzer & Jones, .	1	—	900	R. R. supplies and small castings.
Jackson	A. Weise,	350 River ave.	1873	Weise, Staube & Co.	1	—	700	Malleable iron and steel castings.

ENGINE AND MACHINE SHOPS.

Style of Works	Style of Firm.	Office.	Estab'd.	Who By.	Cupalos.	Air Furnaces.	Tons Capacity	
—	Robert Lea,	1st ave. and Ferry st.	1854	Robert Lea,	1	—	4,500	Foundry.
—	A. Hartupée,	1st ave. and Short st.	1847	White, Hartupée & Co. .	2	1	5,000	"
Duquesne,	James Rees,	4th & Duquesne way,	1854	James Rees,	2	—	8,000	"
Atlas, . .	Atlas Works,	28th & Smallman sts.	1866	Atlas Works,	2	1	15,000	"
Iron City,	McIntosh, Hemphill & Co.	12th and Pike streets,	1857	McIntosh, Hemphill & Co.	1	1	5,000	"
Industrial,	Hugh M. Bole,	{ Point alley and } { Duquesne way, }	1856	H. M. Bole,	—	—	—	No Foundry
—	Ramsey & Renton,	67 Water street,	1847	R. Ramsey & Co. . . .	—	—	—	"
—	J. & J. B. Mulholland, . .	67 Old avenue,	1861	McClelland & Mulholland,	—	—	—	"
—	Geo. M. Moore,	328 Lacoek street,	1872	Geo. M. Moore,	—	—	—	"
—	Anderson, Maxwell & Porter	33 Park way,	1859	Nuttall & Kirkpatrick, .	—	—	—	"
—	Armstrong & Hutchison, .	Park way & Sandusky	1865	Andrews & Armstrong,	—	—	—	"

These forty foundries and engine shops occupy a space of 128 acres, and there is in the buildings, machinery and ground capital to the amount of \$2,292,000. They employ 1,936 hands, whose wages amount to \$1,053,680, yearly, and use 69,980 tons of pig metal. They also consume, among other materials, 650,000 bushels coke, 544,000 bushels coal, about 100,000 bushels sand-loam, 200,000 fire brick, 400 tons fire clay, about \$150,000 of iron and nails, 75 tons brass and copper, 500,000 feet of lumber, and the value of their product is about \$4,300,000.

STEAM PUMPS.

There are three establishments manufacturing the above articles.

Style of Works.	Style of Firm.	Office.	Estab'd.	By.
Eclipse.	S. D. Hubbard & Co.	1st av. & Ferry.	1873	S. D. Hubbard & Co.
Keystone.	Epping, Carpenter & Co.	32d and Penn.	1866	Pottmayer & Winter.
Hutchison.	Hutchison & Co.	112 Liberty av.	1874	Hutchison & Co.

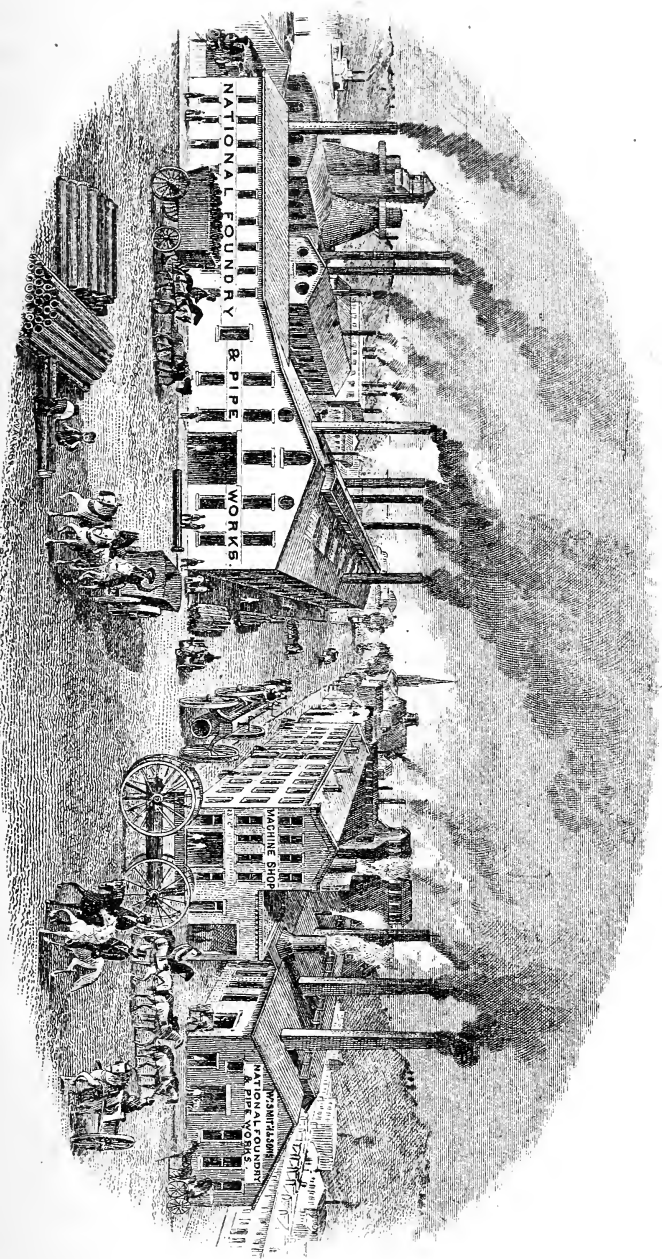
These various works each produce a special pump, having its own peculiarities. They employ 46 hands, whose wages amount to about \$40,000. The works occupy 100 by 450 feet, and the capital in machinery, buildings and ground is about \$50,000. No statistics of the products of the business could be obtained.

There are in addition eleven other works that might be classed under foundries, to whose working, cupalos and air furnaces are requisite, and who melt pig iron in the processes of producing the articles they manufacture. Those are domestic hardware manufactories, saddlery hardware factories, plow factories and pipe foundries. For the purpose of a more distinct classification of the products of Pittsburgh, they are classed in groups, distinct from other foundry business, and the statistics of each class subjoined. There are four establishments making

DOMESTIC OR BUILDERS HARDWARE.

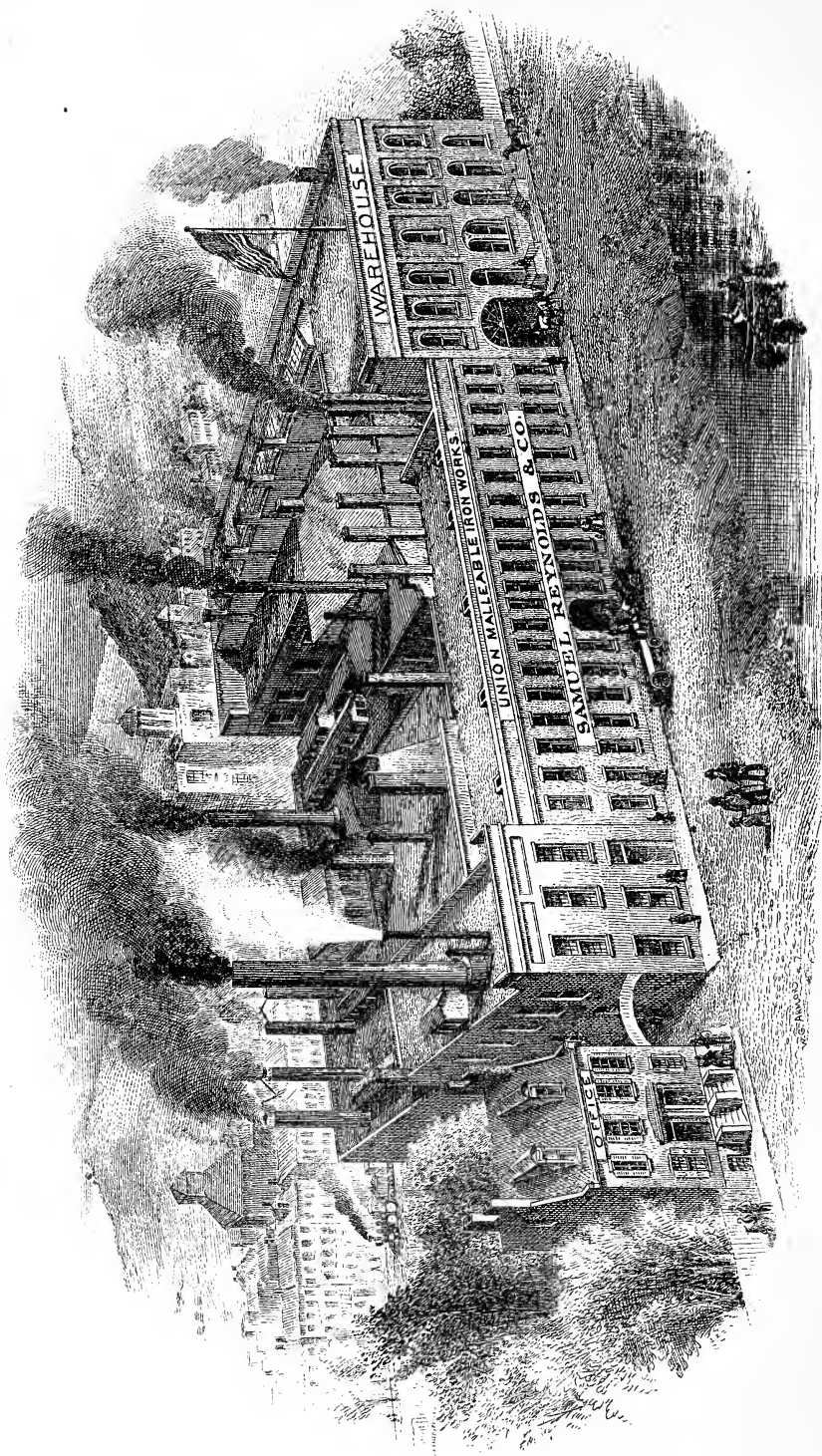
Firm.	Office.	Estab-lished.	Who By.	Cupalo.	Capa'ly. Tons.
Jacobus & Nimick } Manufacturing Co. . . }	Diamond st. . . .	1855	Jones, Walling- } ford & Co. . . . }	1	2,000
Livingston & Co. . . .	253 Washington av.	1867	Livingston & Co. . .	1	1,500
Jarvis & Adams. . . .	Diamond st. . . .	1870	Jones & Adams. . .	1	1,500
Logan & Strobridge. .	108 Water. . . .	1874	Logan & Strobridge.	1	1,600

These four firms employ 315 hands, whose wages amount to \$140,000 annually. The space occupied by these works is 6 acres, and the capital in machinery and buildings is about \$215,000. Their consumption of coke and coal is 73,000 bushels. There is used in the production of the articles they make, 3,250 tons pig metal; also about 3,000 gallons Japan and an equal amount of varnish. In this branch is included the manufacture of stock and ore, depot, dormant, pig metal, portable, platform and counter scales; paint, "kaughphy"



James F. Smith, 314, 1884.

VIEW ON TWENTY-THIRD STREET, PITTSBURGH.
NATIONAL FOUNDRY AND PIPE WORKS.



Amos, Fairbanks & Co. Lith.

VIEW ON THE ALLEGHENY RIVER FROM SIXTEENTH STREET BRIDGE.
AT SAM'L REYNOLDS & CO'S MALLEABLE IRON WORKS.

and corn mills; copying presses; locks, of twenty different descriptions; a great variety of latches, bedstead castors and fasteners, weights, bell-pulls, sauce pan handles, wardrobe hooks, hinges, bolts, stands for fire and sad irons, umbrella stands, tobacco cutters, locking hasps, in fact every description of malleable casting and domestic hardware, and their product is about \$450,000 yearly.

SADDLERY HARDWARE,

Embracing all the articles which the name implies, is manufactured by three establishments. The list embraces a long line of articles which it is useless to recapitulate, as they are familiar to all persons in the trade. The firms are:

Firm.	Office.	Estab'd.	By.	Cup- los.	Capacity
Sam'l Reynolds, .	350 River ave.	1863	Sam'l Reynolds,	1	1,200
Crawford Mf'g Co.	293 Liberty av.	1849	Olnhausen, Crawford & Co.	1	1,500
Gilliam Mf'g Co.*	293 Liberty av.	1867	Gilliam Manufacturing Co.	—	—

*Manufacture as a specialty Gilliam's Patent Coach Pads and Gig and Express Trees; the only factory of the kind west of the mountains.

These three establishments employ 285 hands, whose wages will amount to \$126,000. They use 1,000 tons of metal, 100,000 tons of coal, 70,000 bushels of coke, 12,000 bushels sand, 5,000 lbs. of glue, 50 tons of wire, 12 tons of emery, 2,000 ozs. of silver, 50 tons wrought iron, 50,000 fire brick, 50 tons fire clay, 24 tons of paper, leather to the amount of \$12,000, silk thread and hair to amount of \$1,500, boxes for packing to value of \$14,500. The space occupied by the establishments is 4 acres, and the capital in machinery, buildings and ground is \$265,000. The yearly value of their products is \$370,000 to \$400,000.

The manufacture of

PLOWS.

Has also been a leading business in Pittsburgh. There are three plow works in the city. The full statistics of those cannot be given, one of the firms declining to furnish any information. The largest of the three, and from the variety and scope of the implements manufactured, is the

PITTSBURGH GLOBE PLOW WORKS, ALEXANDER SPEER & SONS, PROPRIETORS.

It is one of the largest plow manufactories in the country, and is a fair representative of Pittsburgh's industrial growth. The Globe plow works were established nearly half a century ago, in the year 1828. During that time they have been continuously in operation. The original factory was a one-story frame building, without a foundry, and occupied a space of twenty feet by one hundred. The present works occupy 270 by 240 feet, or over an acre-and-a-half of ground, and is a two-story brick with a foundry and a cupalo of 2000 tons capacity. The foundry floor occupies a space of 100 by 120 feet. The blacksmith

shops and finish rooms are two-story brick buildings, 60 by 270 feet. The store-room floor, which is in the second story, is 60 by 230 feet. From eighty to one hundred hands are employed, and sometimes more.

The quality and acceptability of the plows made from this establishment is certified to by the fact, that beside taking a medal and diploma at the world's fair in Hamburg in 1863, and a medal at the London exhibition of all nations in 1851, they have carried off gold and silver medals and diplomas at more than thirty State and county fairs in as many years in the United States.

The Globe plow works employ 80 hands, whose wages will average \$50,000 a year. The establishment will consume 1500 tons of pig metal yearly, \$30,000 of woods, 300 tons of steel, and 500 tons of iron; and produce plows, cultivators and similar agricultural implements to the number of 90,000, having a value not far from half a million dollars. The capital in machinery, grounds and buildings is about \$200,000.

The other factory was established in 1846, by Robert Hall, and is now carried on by Spratt, Johnston & Co. They employ 45 men, whose wages amount to \$20,000. The value of their improvements is stated at \$50,000, and their sales at \$100,000.

The manufacture of

BOLTS AND NUTS

Is another important branch of the iron business of Pittsburgh, there are in the city four factories. As the manufacture of these articles originated in Pittsburgh, a short history of them will not be out of place in this work.

In 1845 or 1846 William Kenyon, of Steubenville, Ohio, invented a machine for cutting and pressing a nut at one operation; the right of which invention was purchased by Haigh, Hartupée & Co., from him in 1850, who then applied as his assignees for a patent, which was granted shortly after. Some period after the time mentioned as the date of Kenyon's invention, Isaac H. Steer constructed dies for a similar purpose.

In the spring of 1850, the first machine for that purpose was built by Henry Carter and James Rees. Henry Carter then purchased the right of Isaac H. Steer, and obtained letters patent, both in the invention of Steer and of Carter & Rees.

In April, 1856, James Rees disposed of his interest in the manufacture to Henry Carter, who at the same time formed a co-partnership with Charles Knap, then of the Fort Pitt Foundry, under the style of Knap & Carter, Charles Knap having purchased one-half of the patent for the territory west of the Allegheny Mountains. On the 1st of January, 1857, they associated with them John W. Butler, the style of firm being Knap, Carter & Co., from which firm the Standard Nut Company proceeds.

The four establishments in operation in the city are:

Firm.	Estab'd.	By.	Office.
Standard Nut Co.	1850	Carter & Rees,	— — — — —
Lewis, Oliver & Phillips, .	1863	Lewis, Oliver & Phillips,	91 Water st.
Charles & McMurtry, . . .	1875	Charles & McMurtry, . . .	16th street.
Pittsburgh Manufac'g Co.	1871	Pittsburgh Manufac'g Co.	28th street.

These four establishments employ 800 hands, and pay wages to the amount of \$388,000. The establishments occupy eight acres of ground, and the capital in the machinery, buildings and ground is stated at \$505,000. One of these, LEWIS, OLIVER & PHILLIPS, however, employ a large proportion of their hands in the manufacture of what is known as heavy hardware, using the product of their rolling mills to the extent of 13,000 tons. Two others produce nuts and bolts exclusively. Lewis, Oliver & Phillips use 100 bolt machines, 20 nut machines, 25 punching machines, 10 hammers, and 108 miscellaneous machines. The Standard works use 15 nut machines, 3 bolt machines, 6 washer machines, 12 tapping machines, and consume about 6000 tons iron. Charles & McMurtry use about 4000 tons. The product of these four establishments is about \$1,280,000. The Pittsburgh Manufacturing Company, beside bolts, manufacture a variety of specialties of iron.

LOCOMOTIVES.

An important and growing industry of Pittsburgh is the manufacture of locomotive engines, which, though of recent origin, forms a considerable and interesting item in the aggregate value of products. There are in Pittsburgh and Allegheny two locomotive works. "THE PITTSBURGH LOCOMOTIVE AND CAR WORKS," a joint stock company, chartered under the laws of Pennsylvania, for the building of locomotives, passenger and freight cars, was the pioneer in this business. The company was organized in 1865. The works are located in the Sixth ward, Allegheny city. The ground was broken for this largest manufactory within the limits of that city on August 1st, 1865, the shops were ready for operation in the autumn of 1866, and the first locomotive was turned out in the spring of 1867. Since that date the works have been in almost continuous operation; and although the buildings were liberally planned and furnished with machinery far exceeding any anticipated need, so rapidly did the business increase that frequent additions of machinery and buildings have been imperative. At this time the structures required in conducting the operations necessary for the production of a complete locomotive, cover nearly two and one-half acres in area. They are all of brick, built in the most substantial manner, and embrace the following: Machine shop, 290x120; engine room, 50x25; smith shop, 250x70; paint shop, 70x55; carpenter and pattern shop, 115x70; iron foundry, 135x70; flask shop, 35x23; cupalo house, 23x22; brass foundry, 60x50; boiler shop, 250x70; pattern store room, 70x55; and other smaller buildings. The grounds have a frontage of 415 feet on Beaver avenue, running back to the Ohio river about 800 feet. Switches of the Cleveland & Pittsburgh

Railroad, with tracks running into the enclosure, give easy connection with all railroads centring in Pittsburgh, greatly facilitating, as mentioned in the chapter on their manufacturing advantages, the receipt of supplies and shipment of their manufactured products. These latter are almost exclusively locomotives—the company never having embarked in the manufacture of cars. The locomotives constructed are of every class of broad and narrow gauge, from five to fifty tons weight, and adapted to all kinds of service. They are used in every section of the United States, and have achieved a high reputation. The annual capacity of the works is about one hundred locomotives of the class usually employed on full gauge railroads, to produce which requires the labor of some six hundred workmen, mostly skilled, and a vast array of machinery. The projectors of this establishment are reaping a fair reward for their enterprise in inaugurating it, and the aggregation of this body of mechanics has had a large influence on the growth and prosperity of the immediate locality.

The other works were established for the manufacture of **LIGHT LOCOMOTIVES**, and are carried on by **PORTER, BELL & Co.** The works were established in 1861, by Smith & Porter. Their manufacture of locomotives is of such as are adapted to narrow gauge rail roads, contractors' use, furnaces, mills, mines, and all kinds of special services; nothing over twenty tons weight being made. The establishment has turned out 145 light locomotives in the past fifty-four months. The establishment occupies one-and-a-half acres of ground, and there is \$150,000 of capital in the plant of the works, which has one cupalo of 1,500 tons capacity. The establishment, during the past year, under the depression of business, has been running about one-half of its capacity, employing 116 hands, whose wages amounted to \$60,000; used 120 tons of pig metal and \$37,500 of steel, wrought iron rivets, etc. The office of the works is at No. 5 Smithfield street, and the works are on the line of the Allegheny Valley Rail Road, near Fiftieth street.

IRON BRIDGE WORKS.

There are two establishments manufacturing iron bridges in Pittsburgh.

Style of Works.	Style of Firm.	Office.	Estab'd.	By.
Keystone Bridge Works. }	Keystone Bridge Co.	50th street.	1860	Shiffler & Pipper.
Iron City Bridge Works. }	C. J. Schultz. . . .	198 Penn av..	1856	C. J. Schultz.

These two works, when running full, employ 650 hands, whose wages will amount to \$350,000 a year. They will use about 8000 tons of iron. The space occupied by the works is seven acres, and the capital in machinery, buildings and ground, \$425,000.

The largest of these, and the largest in the United States, is the Keystone Bridge Co., which was organized as a chartered company in 1865. The annual capacity of the works is equal to about \$3,000,000 of production. As the contracting parties for the construction of the famous St. Louis and Illinois bridge,

having the largest spans in the world, these works have a cosmopolitan reputation, and consequently Pittsburgh in this direction of business. The experience acquired in the building of this bridge, and the facilities required to be created to carry on the work, has necessarily given this company advantages in construction. Two hundred and thirteen iron bridges had been erected by the company up to 1874.

The other establishment is an individual works, and while not of as magnificent proportions as the Keystone, has a reputation equal to its capacity. The bridge across the Allegheny river of the Pittsburgh, Ft. Wayne & Chicago R. R. was constructed by the Iron City Works, and the ability of this firm is shown by the fact that the old wooden structure was removed and the iron one substituted without stopping the passage of a single train. The bridge over Forbes street in the city of Pittsburgh is also the work of this establishment, as well as the Sylvan avenue bridge. Twenty bridges were constructed by this establishment in 1873-4-5.

Iron bridges or iron ships, iron cannon or iron water pipe, nothing, be it great or small, to be constructed of iron, presents obstacles to the skillful mechanics of Pittsburgh, or draws too heavily on the resources or facilities of the city.

RAILROAD, SPIKE AND RAIL ROAD CHAIR WORKS.

The manufacture of these important articles is the exclusive business of one rolling mill, the "Glendon," DILWORTH, PORTER & Co. This extensive manufactory was started in 1852 by PORTER, ROLFE & SWETT. It is the only establishment of the kind in Pittsburgh. The railroad spikes are manufactured by "Swett's Rail Road Spike Machine," the patent of which for the United States is owned by the firm.

The peculiarity of the spikes made by this machine is, that they are larger under the head where the greatest strength is required, and have a sharp chisel point, therein differing from the article made by other machines. Although fitted to carry on the manufacture of merchant iron in all its branches, the product of their mills is used in the making of railroad spikes, railroad bolts and nuts, fish bars, railroad chairs, and other articles of railroad supplies. The works cover an area of about two acres, and the capital in grounds, buildings and machinery, is \$400,000. Two hundred and twenty-five hands are employed, whose wages will average \$175,000 a year. The capacity of the works is 65 tons a day, and during the war period the value of products was \$1,000,000 yearly. The works have 8 spike machines, beside the puddling and heating furnaces enumerated in the table of rolling mills.

SPIKES AND BOILER RIVETS

Are, in addition to the quantities turned out by the nail factories attached to the rolling mills, manufactured by S. SEVERANCE, No. 50 Water street, who makes the production of those articles his peculiar business. The establishment origi-

nated in 1840 with L. Severance, and now employs one steam engine running 10 spike machines, with a capacity of 3,600 kegs a year. This factory employs 35 hands, and turns out 40,000 kegs of spikes and rivets a year; worth about \$150,000; the machinery is valued at \$500,000; and the space occupied by the works is 50 by 160 feet.

MANUFACTORIES OF WROUGHT IRON PIPE AND BOILER FLUES.

The manufacture of wrought iron pipe and boiler flues is one of the important branches of the manufactures of Pittsburgh. There are the following five firms engaged in the business.

Firm.	Office.	Estab'd.	By.
Spang, Chalfant & Co. .	70 Sandusky st. . .	—* .	Spang & Co.
Evans, Dalzell & Co. .	165 First avenue. .	1866	Evans, Clow, Dalzell & Co.
Byers, McCullough & Co.	98 Water street. . .	—	Byers, McCullough & Co.
Rhodes & Potter, . .	140 First ave. . .	1871	Wm. Graff & Co.
National Tube Works, .	Wood and 3rd ave. .	—	National Tube Works.

These five firms employ 1,290 hands, whose wages average \$625,000 a year. The works occupy a space of 14 acres, and the capital in machinery, buildings and ground is \$1,150,000.

These firms turn out wrought iron pipe and boiler flues from $\frac{1}{2}$ inch to 15 inch diameter. The facilities at Pittsburgh for manufacturing this article of general use are not approachable at any other point. The best illustration of this is that the National Tube Works, originally established at Boston, was removed to Pittsburgh as the point where the greatest combination of facilities for the cheap manufacture of this article existed. The capacity for production of these five works is equal to 80,000 tons a year; the actual product at present is about 60,000 tons. The National alone *now* converting 125 tons iron daily into pipe.

CAST IRON PIPE MANUFACTURERS.

One of these, the FRANKLIN, was established in 1837 by Rowan Edgar & Bradley, and is now carried on by JAMES MARSHALL & Co. It has three cupalos of a capacity of 20,000 tons. The works occupy a space of about three acres, and the capital in machinery and real estate is about \$90,000. The works, when running full, employ 100 men, whose wages will amount to \$40,000.

The other, the NATIONAL, WM. SMITH & SONS, is claimed to be the largest in the United States. It was established by Wm. Smith in 1854, and has four cupalos, stated to be of 15,000 tons capacity each. The space occupied by the works is five and a half acres. In 1874 the works, employed on a large contract, used 25,000 tons pig iron, employed 600 men, whose wages were \$350,000. They used 500 tons of straw, 500 barrels flour, 346,000 bushels of sand, 50 barrels of molasses, and 1,800 barrels of blacking. These works make pipe from $1\frac{1}{2}$ inch to 50 inch in diameter, and have facility to manufacture 2 miles 2 inch, 3 miles 3 inch, 3 miles 4 inch, 3 miles 6 inch, 2 miles 8 inch, 2 miles 10 inch, 1 mile 12

*See Rolling Mills.

inch, $\frac{1}{2}$ mile 15 inch, $\frac{1}{4}$ mile 16 inch, $\frac{1}{2}$ mile 20 inch, $\frac{1}{2}$ mile 24 inch, $\frac{1}{2}$ mile 24 inch, 1 mile 36 inch pipe each week. These works, owing to circumstances, have not been running for the past two years, but are about going into operation again. The statistics of the past are given to show the capacity in that branch of business here, as well as in others.

BOILER, STILL AND TANK MANUFACTORIES

Form another important division of the iron manufactures of the city; there are the following works:

Firm.	Office.	Establ'd.	By.
W. Douglass & Son. .	41 Carson. . . .	1833	Withrow Douglass.
R. Monroe.	12 Water.	1835	J. Litch.
D. W. C. Carroll & Co	3d av. and Liberty.	1842	M. Stackhouse.
Jared M. Brush. . .	61 Penn av. . . .	1852	W. Barnhill.
James Thorn & Co. .	2d & Duquesne way	1866	McCollister & Co.
Riter & Conley. . .	55 Water.	1861	James Riter.
Brenneman & Ward. .	26 Penn.	1862	W. Barnhill & Co.
James Lappan & Co. .	17th street. . . .	1862	D. F. Agnew.
James McNeel & Bro.	29th and Railroad. .	1865	Jas. McNeel.
A. Stetler & Sons. .	17th street. . . .	1865	A. Stetler & Sons.
Eclipse Steam Manuf.Co		1871	Eclipse S. M. Co.
Manchester & Sons. .	28th and Railroad. .	1872	Manchester & Sons.
James Cuddy & Co. .	Br's Bl'k, Duquesne way	1873	James Cuddy & Co.
Bauman, Sunday & Co	3d & Duquesne way.	1846	Bauman, Sunday & Co

These fourteen establishments occupy a space of 42 acres, and the capital in machinery, buildings and ground is \$358,000. The amount in buildings or machinery in carrying on this business is not heavy, the machinery and facilities of tools and buildings required not being of an expensive nature. They employ 587 hands, whose wages amount to \$269,000. They use 8,445 tons of sheet and plate iron, 750 tons castings, 200 tons rivets, 110,000 bushels coal. Their production will average \$1,500,000 a year. The building of iron tanks for holding the petroleum product of Western Pennsylvania, is a prominent feature in this branch of business. Some idea of the immense amount of tankage constructed may be found from the fact that D. W. C. Carroll & Co. constructed in twenty-four months 2,000 tons of tankage. Nor are the labors of this class of works confined to boilers, stills and tanks. In 1871 Wm. Douglass & Son built three iron tow boats, and in 1875 Riter & Conley constructed two iron boats to run on South American rivers. Workers in iron, familiar with its constitution and its handling, experienced in its capabilities, the mechanics of the Iron City find no obstacles in the construction of anything of which iron is the material. To the skilled workmen of the city, the forge, the hammer and the iron bar or sheet, is what it is popularly fabled the jack-knife and the pine stick is to the ingenious New Englander.

THE MANUFACTURE OF CHAIN CABLES

Is carried on by two establishments, who manufacture under separate patents. Both works are but lately started, and the product is yet of the future. One is Union Chain & Cable Co., at No. 1239 Penn avenue, and the other, the Pittsburgh Chain & Car Lock Manufacturing Co., at No. 7 Sixth avenue. The two will employ about 125 men, when in full operation, and of course their consumption of iron will be in proportion to their business, as wrought iron is, beside labor, the sole consumption, except the coal and coke used for fuel. There is another establishment carried on by Robson & Campbell, by which hand-made chain is produced, but the firm declining to furnish any information, no other record can be made. There is also a small chain manufacturing shop where hand-made chain is made, carried on by Wilkinson & Bros., at 926 Penn avenue.

WROUGHT IRON ANVILS.

The manufacture of anvils of the above nature is carried on by D. W. Baldwin & Co., under the title of the American Anvil Works. This is the only works of its kind in the United States. They were only established in October, 1875, and the statistics are more in the future than in the present or the past. The works occupy a space of 50x160, and the machinery is of a value of about \$4,000. At present 20 hands are employed, whose wages amount to about \$10,000 a year. The anvils average in weight from 50 to 500 pounds, and the firm expect to turn out during the present year about 5,000 anvils. The works are at Twenty-eighth and Railroad streets.

CARBON BRONZE.

This is another special manufacture prosecuted in the city. It was established in 1873 by B. W. Baldwin, and is now carried on by Baldwin & Stotler, at Twenty-eighth and Railroad streets. The article produced is journal bearings, made from a combination of metals that gives the name to the article, which is of an oily nature, and not likely to heat. The establishment has used in the past three years about 140,000 pounds of copper, spelter and other metals, and are using at the present time 600 pounds a day. The production requires but few hands, some four or five moulders, and the finished article is worth twenty cents a pound.

IRON FORGING.

Although the forging of iron, in a greater or less degree, in its smaller shapes, is carried on in most of the machine shops and rolling mills of Pittsburgh, yet as a distinctive business, there is but one FORGE where large or heavy shaftings, and similar work, is exclusively done. These works are known as the Duquesne Forge. They are carried on by Wm. Miller, at the corner of First street and Duquesne way, having been established in 1869 by the same person. There is employed in the works, when running full, about 40 hands, whose wages amount to \$35,000 annually. There are in the forge four furnaces and four forging fires, one four-ton hammer, having a six foot stroke, one two-ton hammer, having a

three and a half foot stroke, and one steam valve hammer of 1,500 pounds. The space occupied by the forge is 85x150 feet, and the capital in machinery and buildings is \$60,000. About 1,000 tons of forgings are produced yearly.

JUNIATA WIRE AND RIVET MILL.

W. P. TOWNSEND & Co., 19 MARKET STREET—ESTABLISHED 1849.

It is the only manufactory of the kind in Pittsburgh exclusively devoted to the production of rivets. The establishment makes all sizes of iron and tinned rivets suitable for every description of sheet iron and tin plate work, from eight ounce to three-eighth inch in diameter. The rivets are all made of the choicest Norway iron. The establishment produces about 800 tons of rivets a year, employs 30 hands, whose wages amount to \$18,000 a year.

The same firm carry on the manufacture of wire. The first mill was established in 1827, although the manufacture of wire was prosecuted by R. Townsend in 1816. The capital in machinery and building is \$100,000, and the product about 500 tons of wire a year. The two establishments consume 1,300 tons of iron annually.

SCRAP IRON BUSINESS.

The gathering and selling of scrap iron has become an important business of the city, and there are engaged in it four principal firms, beside many junk shops, whose gatherings find their way to the larger firms. Those four are:

Firm.	Office.	Establ'd.
Mullen & Maloney.	Duquesne way and Cecil alley.	1834
Maloney & Lanahan.	355 Penn avenue.	1864
Warren Springer.	4th st. and Duquesne way. . .	1872
W. J. Hammond.	11th st. and Duquesne way. .	—

These four firms employ 41 hands, whose wages amount to \$27,000. They use 40 horses and 27 wagons in hauling, and handle 25,000 tons of scrap metal. A larger amount of this metal is handled in the city by many small dealers, but of it no statistics could be had. Many of the mills also buy direct from parties at a distance, all of which, as well as the amount handled by the four firms whose names are given, take the place of pig metal in the workings of the rolling mills.

GLOSSING AND FLUTING IRONS.

This is a special and patented manufacture. It is carried on by the Hewitt Manufacturing Co., at No. 166 Penn avenue, who employ 10 hands, and produce about \$30,000 of these articles.

MANUFACTURERS OF PATENT FURNACE GRATES.

This is another special manufacture of the city. It is pursued by W. C. Childs & Co., No. 133 Wood street, by whom the West and South are supplied. No statistics were furnished of their business.

GALVANIZING WORKS.

The Pittsburgh Galvanizing Works, operated by James McQuiston, corner of Twenty-sixth and Railroad streets, is a special establishment. It was established in 1871 by McQuiston & Craft, and employs 16 hands, whose wages will average \$6,000 annually. The galvanizing of metals is largely carried on, and the works consume 200 tons of zinc a year, 125,000 pounds of sal ammonia, and \$3,000 of acids. The works occupy a space of 80x210 feet. The pickling bath is 21 feet long, 32 inches wide, and 18 inches deep. The pot for holding the melted zinc is 12 feet long, 26 inches wide, 49 inches deep, and holds 28 tons of melted metal. The works are capable of turning out seventy or eighty dozen of coal hods, from six to ten tons of wrought iron pipe, or six tons of sheet iron per day, and other work in proportion. Mr. McQuiston has lately been filling orders for coating plates of homogeneous steel, and has succeeded in galvanizing some of very large size, 108x45 inches. Another exploit lately performed at these works was the coating of cast iron bath tubs for the country. These articles had been ordered from New York, and *could not be found in that market*, but the work of galvanizing them was perfectly done here.

WESTINGHOUSE AIR BRAKE.

It is of no small interest that Pittsburgh is the birthplace of this extremely important invention, as well as the seat of its manufacture. The Committee on Science and Arts of the Franklin Institute, in concluding an exhaustive report on the Westinghouse Air Brake, says: "That by contriving and introducing this apparatus, Mr. Westinghouse has become a great public benefactor, and deserves the gratitude of the traveling public at least." At no time more than when speeding along at the rate of from thirty-five to forty miles an hour, does the traveler feel the value of an invention, that either by the will of the engineer or acting automatically brings the train to a stop in *fifteen seconds*, without shock or action to disturb the inmates of the cars. Broken bridges, wild trains, accidental obstructions or malicious impediments, lost their terrors when the persevering efforts of the inventor and his friends succeeded in securing the adoption of this invention, so wonderful in its effects. In a series of experiments conducted by the committee above quoted, a train running thirty miles an hour up grade, was brought to a stop in sixteen seconds, by the engineer. In a second experiment, the brake being applied from the interior of the car, a train running between thirty and thirty-five miles an hour, came to a full stop in fifteen seconds. In a third experiment, the train running thirty miles an hour, down grade of twenty-six feet per mile, the four rear cars were detached, and the brake acting automatically, the cars came to a full stop in eleven seconds. In another experiment, the engine alone being severed from the train, the speed being forty miles an hour, down a grade of 28 feet to the mile, the train came to a rest in 10½ seconds.

The *first* experiment quoted showed that a train moving at a speed of 30 miles an hour, may be stopped in a distance of less than 550 feet in a quarter minute's time. The *second* showed that a train, by simply pulling a cord in any part of it, may be stopped, when going at the rate of 32 miles an hour down grade, in 552 feet in a quarter minute's time; and the *third* and *fourth*, that if the cars became detached, the brakes apply automatically with equal effect. A train running 35 miles an hour will pass of 3080 feet in a minute, or about the length of an ordinary car in a second. Two trains approaching each other at that speed, coming into collision, would require only half a second to telescope. The importance of this invention is thus easily seen from the certainty and celerity with which the application of the Westinghouse Brake brings a car or a train to a full rest in a quarter of a second, or less.

The building in which these wonderful brakes are manufactured at Pittsburgh, is 264 feet long by 100 wide; there are employed in it, in the production of the various brakes made, 120 hands, whose wages amount to \$75,000 a year. There is consumed at the present time 900 tons pig iron, 200,000 bolts, 250,000 feet gas pipe, 50,000 feet rubber hose, 15 tons rivets, 50 tons ingot copper, 20 tons malleable fittings, 100 tons merchant iron and forgings, 37,500 bushels of coal, and the products of the works in six years has reached \$2,250,000 in value.

There are manufactured the Westinghouse Automatic Air Brake, Vacuum Brakes, Locomotive Driver Brakes, Westinghouse Freight Brakes, and Truss Brake Beams. These brakes are in use in Canada, New Brunswick, Mexico, Cuba, Peru, Chili, Equador, Belgium, England, New Zealand, and Australia, all supplied from Pittsburgh.

CORNICE MANUFACTURERS.

There are two manufactories of cornices from galvanized iron in operation:

Firm.	Office.	Established.	By.
H. Adler,	152 First avenue,	1869	H. Adler.
Rasner & Dinger, . .	16 Market street,	1870	A. O. Ketteridge & Co.

They employ 30 hands, whose wages are \$16,000 a year, consume about \$16,000 of galvanized iron, \$5,500 of zinc, \$5,000 tin plate, 8,000 lbs. solder, and produce \$50,000 of cornices, window caps, etc.

MACHINERY AND MANUFACTURERS SUPPLIES.

There are two firms who make this branch of trade their exclusive business:

Firm.	Office.	Established.	By.
Kay, McKnight & Co. .	75 Water street, .	1868	Geo. H. Stover & Co.
Hutchison & Co. . .	112 Liberty Street,	1872	Hutchison & Co.

They deal largely in steam pumps, machinery packing, and like class of goods. Their sales amount to about \$200,000 a year.

WOOD-WORKING MACHINERY.

There are two firms whose business is the manufacture of the above description of machinery, such as planers, matchers, mortising, tenoning and re-sawing machines. The firms are:

Firm.	Office.	Established.	By.
M. B. Cochran & Co. . . .	121 Liberty street,	1870	M. B. Cochran.
McNish & Butler,	104 Liberty street,	1858	McNish & Butler.

They employ 90 hands, whose wages amount to \$49,000. The space occupied by the works is 124 by 169 feet, and the capital in machinery and buildings is \$50,000. The product of the works is \$150,000.

PLUMBING AND GAS FITTING.

This branch of business is as largely carried on, in a great number of establishments, as is required by the necessities of all large cities, and the number of gas fitting shops of all grades is forty-five. Most of the large shops are included in the brass foundries and in the steam fitting establishments. As near as could be ascertained there are about 200 hands employed in this branch of business, whose wages will average about \$90,000 a year, and the work will amount to quite \$650,000 a year. They consume gas fixtures, wrought iron pipes, malleable iron fittings, cement, iron castings, iron ware, bath tubs, terra cotta pipe, putty, earthen ware, lead pipe, brass work, and minor articles, but the details of the consumption of each item were not satisfactorily attainable.

STEAM FITTING.

There are six establishments which make this a principal and distinctive feature of their business; although each, more or less, work in plumbing and gas fitting, and also brass founding. These six are

Firm.	Office.	Estab'd.	By.
Craig Bros.	139 Second ave. . .	1845	Gallagher & Co.
Jarvis, Halpin & Co. . .	35 Fourth ave. . . .	1858	W. & S. Jarvis.
S. Cadman & Son, . . .	Duquesne way. . . .	1863	Cadman & Crawford
J. B. Sheriff & Son, . .	68 Water st.	1864	Sheriff & Loughrey.
Atwood & McCaffrey, . .	50 to 60 Third ave.	1865	Atwood & M'Caffrey
Wilson, Snyder & Co. . .	Third av. & Liberty.	1875	Wilson, Snyder & Co

These six establishments carry on steam heating and fitting in all its details. They employ 40 men in this branch of their business, whose wages will amount to about \$24,000 a year. They use about 600,000 feet of pipe and produce work to amount of \$200,000 a year.

THE MANUFACTURE OF GUN BARRELS

Is carried on by James Bown & Sons, who established the ENTERPRISE GUN WORKS in 1848, and consume about 20 tons iron and 2 tons steel a year; employ 20 men

in these works whose wages will amount to \$14,000 annually. There are in use in the works seven turning lathes, two planers, two punching machines, two drilling machines, one bending machine, one steam hammer.

DEALERS IN GUNS AND SPORTING GOODS.

There are three firms that make a specialty of this business, viz:

Firm.	Office.	Estab'd.	By.
James Bown & Son, . . .	136 Wood st., . .	1848	Bown & Tetley.
J. H. Johnston. . . .	285 Liberty st. . .	1867	J. H. Johnston.
H. H. Shulte,	320 Liberty st. . .	—	

These houses deal in all descriptions of guns and other sporting goods; employ 21 hands, whose wages amount to \$13,200, and their sales to \$210,000.

PITTSBURGH CAR WHEEL WORKS.

This establishment is the only foundry of its kind in Pittsburgh. It was established in 1870 by JOHN L. GILL, JR., and occupies two-and-a-half acres of ground. The works employ on an average 40 hands, whose wages are \$20,000 annually. Cold blast charcoal hanging rock metal is almost exclusively used in this foundry, of which about 3,600 tons are yearly consumed. The capital in buildings and machinery, etc., is \$150,000; about 50,000 bushels coal and coke are used in the smelting. The office of the works is at 83 Wood street, Pittsburgh, and the works on Preble avenue, Allegheny city.

JOBGING MACHINISTS AND IRON RAILING MANUFACTURERS.

There are three firms who may be thus classed under this division of business of the city.

Firm.	Office.	Estab'd.	By.
James Bown.	136 Wood.	1848	Bown & Tetley.
Marshall Bros.	71 Diamond st. . .	1818	John Marshall, Sr.
J. Cochran & Bro. . . .	86 Third ave. . . .	1843	Jas. Cochran.

These three firms employ 60 hands, whose wages will amount to about \$35,000 a year. The capital in machinery and buildings is \$110,000, and the space occupied by the works is about one acre. The product of these works will average yearly from \$160,000 to \$175,000. Their products are varied, embracing all descriptions of wrought iron work.

STREET LAMP FACTORY.

This is a new branch of Pittsburgh manufactures, having been established in 1872 by Samuel Morrow, at 112 First avenue. At present it employs but four hands, and produces about 2,000 lamps a year, and is but the nucleus of a larger business. Lamps from this factory have been furnished to towns as far west as California.

There are eight firms that may be classed as

SHEET IRON, TIN AND COPPER WORKERS:

Firm.	Office.	Estab'd.	By.
J. B. Sherriff & Son, .	68 Water st. .	1820	A. Sherriff.
J. T. Kincaid, Jr. . .	107 First av. .	1832	L. & P. Peterson.
E. W. Demmler, . . .	180 Liberty st.	1838	J. H. Demmler.
Sam'l Morrow, . . .	112 First ave. .	1852	M. Shirk.
Daeweritz & Roedel, .	151 First av. .	1858	Roedel & Co.
Wm. Barnes,	47 Market st. .	1863	Roberts, Barnes & Co.
John Burford,	50 Water st. .	1864	John Burford.
Totten & Beiter, . . .	157 Wood st. .	1854	Price & Beiter.

These use yearly 12,000 tin plate, \$17,000 sheet iron, \$19,000 sheet copper, 9,000 lbs. solder, employ 60 hands, and pay \$30,000 wages; and produce \$120,000 of manufactured articles. There are in addition to those a number of small jobbing shops, employing from one to two men, whose statistics are not attainable or important.

IRON SAFE MANUFACTURERS.

Of these there are three in Pittsburgh.

Firm.	Office.	Estab'd.	By.
S. S. Wks, Thos. Barnes	129 Third av. .	1845	Burke & Barnes.
Pitts. Safe & Lock Co .	167 Penn av. .	1871	Pittsb. Safe & Lock Co.
Reisick & Bro. . . .	16th and Pike. .	1861	Reisick & Bro.

These establishments employ 120 hands, whose wages amount to \$88,000. They use \$7,500 of locks, \$7,200 of steel, \$3,000 of sheet iron, \$2,500 of brass castings, \$7,000 of cement, \$10,000 of furnishing goods, occupy 2½ acres of ground, and have \$103,000 in machinery in use. Among that machinery is 15 lathes, 24 drill presses, 7 punching machines, 5 shearing machines, 12 grinding machines, 2 trip hammers, 3 planers. Their produce is about \$150,000 yearly.

IRON AXLE MANUFACTURING.

This branch of iron manufacturing is made an exclusive business by Ahlborn & Neckerman, under the style of the Keystone Axle Works, at Thirty-third and Rail Road streets. The statistics of this establishment were not obtained, and therefore no statements can be made of its production or consumptions.

CHAPTER XV.

STEEL MANUFACTURING AT PITTSBURGH.

It being only within a few years past that Pittsburgh steel has attained so great a reputation, the impression prevails to a considerable extent among the trade that its production by Pittsburgh manufacturers dates but some ten years back. To the contrary, the production of steel has been, with varied fortune, the subject of experiment in Pittsburgh for between forty and fifty years, and certain qualities have been successfully made during the same period of time. The finer qualities of cast steel, for edge tool purposes, have however only been produced for fifteen years past, although some grades have been successfully made for a much longer period, the efforts for their manufacture dating back to about 1828-30.

The production of a quality of steel that should triumphantly compete with the English article, is a success belonging solely to Pittsburgh; for although the manufacture of steel had been attempted by persons in various sections of the United States, and some of the lower grades made, yet we are unable to find record of any establishment outside of Pittsburgh that succeeded in producing a reliable tool steel of a quality equal to the English article. The enterprise was about abandoned in this country, when the success of the Pittsburgh manufacturers revived its spirit; since when several establishments have been put into operation at different points, but leaving Pittsburgh the only great steel producing market of America, where are made all qualities, from the lowest grade of blister up to the finer qualities of tool, sabre and cutlery steel.

The exact date at which the manufacture of steel was first attempted in Pittsburgh is uncertain; but in 1828-30, an Englishman, by the name of Broadmeadow, built a converting furnace in the city, and made steel. The enterprise did not succeed, the quality of the article produced being very poor. The failure was no doubt attributable to the want of proper material; and this cause was, for a long time, the obstacle in the production of the higher grades of steel with all who attempted its manufacture, until it was fast becoming a received opinion that it could not be made from the native irons of America. Years of experience and perseverance have, however, established the contrary fact; and, as before stated, steel equal to the best imported article has been, and is daily produced, from native irons in the steel works of Pittsburgh.

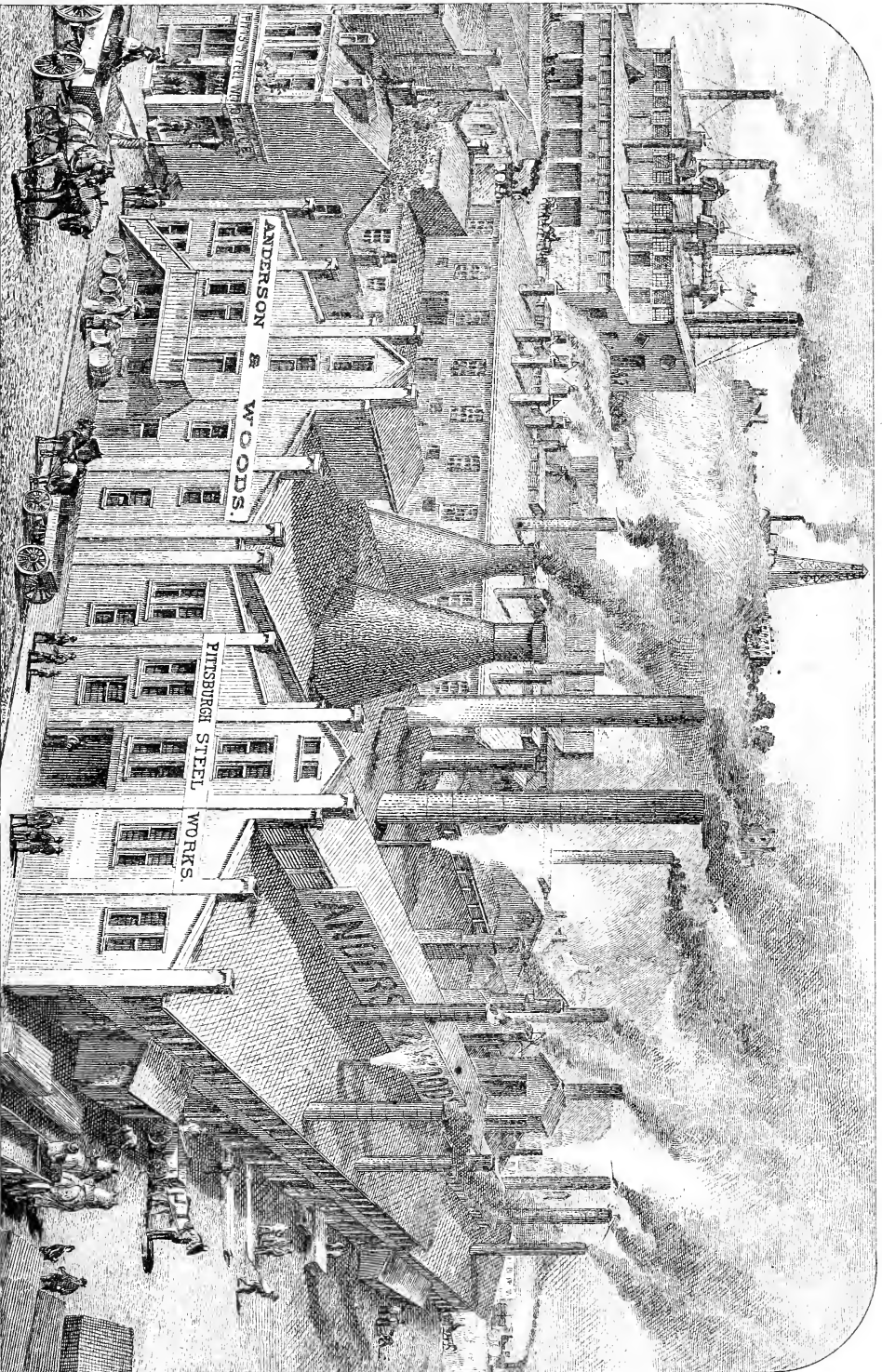
Owing to the abundance and admirable quality of the fuel at this point, the low cost at which the coke and coal can be procured, together with this being a

good market for charcoal irons, Pittsburgh is the best location in the United States for the manufacture of steel. When the use of natural gas is more fully introduced, that superiority will be yet more strongly developed and maintained, and Pittsburgh be not only the cheapest point of manufacture in perhaps the world, but her steels, by reason of the purity of the fuel, unapproachable in quality.

About 1833, Messrs. G. & J. H. Shoenberger commenced the manufacture of blister steel, with one furnace, converting twenty-five tons every three weeks, and continued the manufacture thereof until 1862. A firm under the style of Whitman & Havens also manufactured steel about 1832. The charcoal irons used at that time were admirably suited for the purpose, and the efforts in the production of this grade of steel were successful. The products, however, met with that severe prejudice on the part of consumers that Pittsburgh cast steel afterwards encountered. The introduction of the genuine or blister steel made at Pittsburgh was attended with considerable difficulty. Consumers could not be made to believe that the blister steel of Pittsburgh was in any way equal to that brought across the Atlantic, although expert workmen were sent to visit consumers to prove to them the fact. It was only after Pittsburgh blister steel, which had been rusted by throwing salt water over it, so as to make it appear as of English manufacture, was sold to consumers that it was found to be all that could be desired.

In 1835 the manufacture of springs and axles was commenced by Isaac Jones, which business he carried on until 1840, using the steel made by the Messrs. Shoenberger. The demand for springs of Pittsburgh make having, however, largely increased, Mr. Jones, associating with him Wm. Coleman, commenced, under the firm name of Jones & Coleman, the manufacture of blister, spring, and like grades of steel. In 1845 the firm of Jones & Coleman dissolved, and Mr. Coleman, after carrying on the spring business for a year, in 1846, associating with him J. W. Hailman, John F. Jennings and Samuel Hartman, formed the firm of Coleman, Hailman & Co., for a more extended prosecution of the steel business. Mr. Jones, associating with him — Quigg, in 1845, under the style of Jones & Quigg, erected the Pittsburgh Steel Works, manufacturing therein blister, spring and plow steel, in which similar line of production the firm of Coleman, Hailman & Co. also pursued the business.

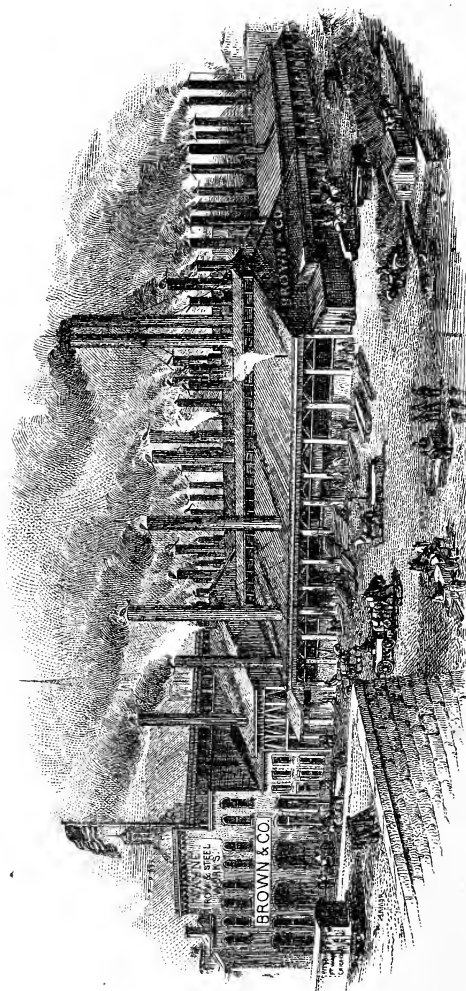
Somewhere about this date a firm under the style of Tingle & Sugden, carrying on the manufacture of files, commenced on a small scale the making of cast steel for their files, and likewise produced a quantity for general sale. Somewhat previous to this, in 1841, Patrick and James Dunn began manufacturing cast steel for G. & J. H. Shoenberger. The works erected by them were quite extensive, having eighteen or twenty holes or furnaces; but six of the holes were, however, run steadily. The enterprise was abandoned after a year or so. One of the causes that led to the relinquishment of the business was the difficulties arising from the crucibles, which were made principally from American clays.



Engraved by H. K. B.

BIRDS-EYE VIEW AT COR. OF FIRST AVENUE AND BOSS STREET.

ANDERSON & WOODS' PITTSBURGH STEEL WORKS.



American Engraving Co. Lith.

**VIEW AT FOOT OF ELEVENTH STREET AND ALLEGHENY RIVER,
WAYNE IRON AND STEEL WORKS.**

At the present time the crucibles are made from plumbago chiefly. These experimenters in the manufacture of American cast steel, although producing it to a considerable extent, failed to make a first-class article, although that made was suitable for many purposes. The material used was Juniata bloom iron. It is proper here to remark, however, that at that early day in the series of investigations and experiments going on among Pittsburgh manufacturers, to the end of obtaining a first-class article of cast steel from native irons, the failure to obtain from any particular iron the higher grade of steel, or an occasional success, cannot be properly placed to the demerit or the credit of such irons as unsuitable or desirable, for the manufacture of steel. The isolation of Pittsburgh from labor skilled in that line of treating metals, and various other difficulties arising from the same cause, made the production of a bar of good quality more the result of accident than skill. Uniformity of temper and of all other qualities is the great essential to good steel, and the ability of a manufacturer to produce, from day to day, steel in which there is no perceptible difference when worked, is the test of success. Many of the producers of steel then, and for a considerable period afterwards, made occasional batches which nearly approached a first-class grade, but the chief quality of *reliability* was wanting.

From about 1844, most of the iron manufacturers of Pittsburgh made the lower grades of steel, and in blister, spring and plow steel a handsome amount of business was transacted; but Coleman, Hailman & Co., and Jones & Quigg, were perhaps the only two establishments that could then come properly under the head of steel works.

In 1849, Singer, Nimick & Co., a new firm, formed for the purpose of prosecuting the steel business, began the manufacture of blister, spring and German steel, and in 1853 the same firm turned their attention to the production of cast steel for saws and agricultural purposes. Previous to that, the firm of McKelvey & Blair, who had commenced the manufacture of files at Pittsburgh upon a large scale in 1850, made steel for the use of their file factory; and in 1852, turned their attention to the production of cast steel for general sale. They are probably entitled to the position of being the first producers of cast steel in any quantity in the Pittsburgh market. McKelvey & Blair made both hammered and rolled steel for the general purposes of the trade, and, during the period in which they were manufacturing, introduced Pittsburgh steel into the Eastern markets. The firm encountered many difficulties, arising from the before-mentioned isolation from a supply of labor skilled in the manufacture of steel, but the chief difficulty of which they complained was "red shortness." That difficulty, it is claimed, they would shortly have obviated by the application in their processes of manufacturing of results obtained through experiments made by Mr. Blair for the destruction of the red short principle—through the use of zinc—in the melting of the steel; but at this time, 1854, the firm ceasing, from pecuniary reasons, to prosecute the business, the experiments of Mr. Blair were carried no further, and their results became public.

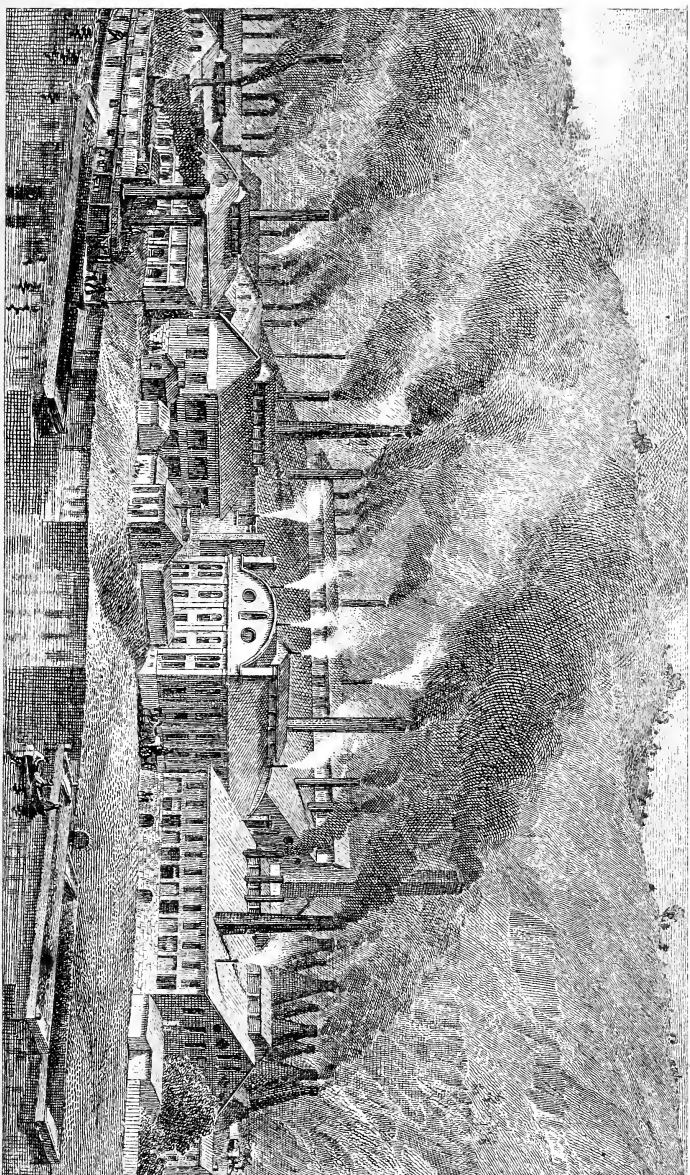
In 1853, the firm of Singer, Nimick & Co., before mentioned, having largely increased the extent and facilities of their works, began the manufacturing of the finer grades of cast steel; and in 1855, Isaac Jones, the successor of Jones & Quigg, commenced the production of similar qualities of steel. Up to this period, we find the successful production of steel in Pittsburgh divided into two periods. From the commencement of the manufacture of blister steel up to about 1850-51, blister, spring and German steel was quite largely and very successfully produced.

From 1851-2 up to 1860, experiments in the manufacture of the higher grades of cast steel, for saw, machinery and agricultural purposes, occupied the attention of the Pittsburgh manufacturers. In the production of those grades of steel great success was obtained, and the steel business of Pittsburgh increased to a very heavy sum. The steel manufacturers, in their experiments during that period, discovered that, so far from it being, as was at one time well-nigh conceded, impossible to make steel from irons made from native ores, the truth was that there were a number of ores, in different localities of the United States, highly valuable for the manufacture of iron for the production of steel; and the feeling became general, that there was a higher stand yet to be taken by Pittsburgh manufacturers in the production of that article.

This feeling led to the formation, in 1860, of the firm of Hussey, Wells & Co. for the express purpose of manufacturing cast steel for edge-tool purposes. This firm was, in 1862, followed in the same line by Park Brothers & Co.; while Jones, Boyd & Co. (successors to Isaac Jones), and Singer, Nimick & Co., turned part of their force in the same direction. The results have been happy. The very best qualities of English edge tool and cutlery steel are more than equalled, in all requisites, by that now produced in the steel-works of Pittsburgh. In nearly all the leading edge-tool manufactories, Pittsburgh steel has supplanted that of English make. What more could be said to show the entire success of manufacturing steel in the United States from native irons? And how suggestive of independence as a nation, is the fact, whether from a commercial or a warlike point of view.

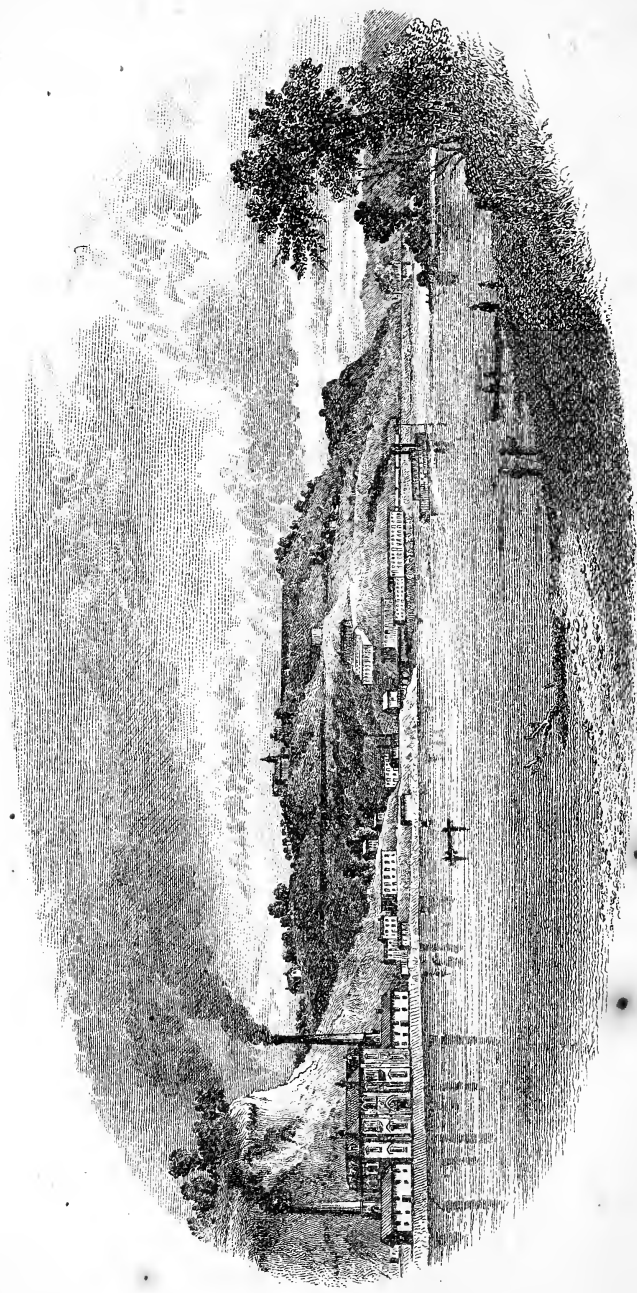
It is only about sixteen years since the effort was made to manufacture cast steel in the United States to any extent, and to-day the facts show that our manufacturers have secured about two-thirds of the American market, the quality and finish of American steel being conceded to be fully equal to any imported. In the article of homogeneous crucible cast steel boiler and fire plate, that made by our Pittsburgh manufacturers is unequalled. Shipments of this description of steel have been made from Pittsburgh to railroad companies and steam boiler manufacturers across the Atlantic, who pronounce it superior in every respect to any produced in Europe.

In the progress of steel manufacturing at Pittsburgh, the low duties on steel were great discouragements; and even with the amendments that have been made from time to time, it is questionable if, without the accidental high tariff



VIEW IN THE THIRTY-FOURTH WARD OF THE CITY OF PITTSBURGH.

SINGER, NIMICK & CO'S SHEFFIELD STEEL WORKS.



Amos E. Blackwell, del. Lith.

VIEW ON THE ALLEGHENY RIVER.
NEW WATER WORKS OF PITTSBURGH.

produced by the increased rates of gold during the war, the manufacturers of edge-tool steel would have succeeded. Pittsburgh manufacturers—at much toil of mind and body, at heavy expense in experiments, and through a large investment of capital—have established, under certain fortuitous circumstances, the independence of the American over the foreign steel. The fact suggests the natural inquiry: If the country affords material that produces steel that has nothing to fear by comparison with the best sent from English works, and if, in attaining that point, labor has also been educated to a degree of skill that insures such success, why not give American manufacturers the benefit of the American market, and the ores of the country the advantages of further experiments among the great variety existing? Is there any reason why the art of steel-making, having through numerous difficulties become one of the fixed facts belonging to the resources of the nation, should not be encouraged to greater efforts?

Our legislators if they would find the policy best adopted to spread prosperity over the land, should carefully take up the histories of the industrial pursuits of the American people, and learn how the fostering of them by protection, has developed the resources of the nation, and given employment and homes to the people. Not only that will be found, but that in all cases the result of home competition has been to reduce the cost to the consumer of those articles where protection against foreign manufactures has been accorded. Cast steel is an instance, and in proof of this fact, Pittsburgh steel is being furnished of equal, and in some grades, superior qualities to English steel, at quite three cents per pound below what was formerly paid for the foreign article.

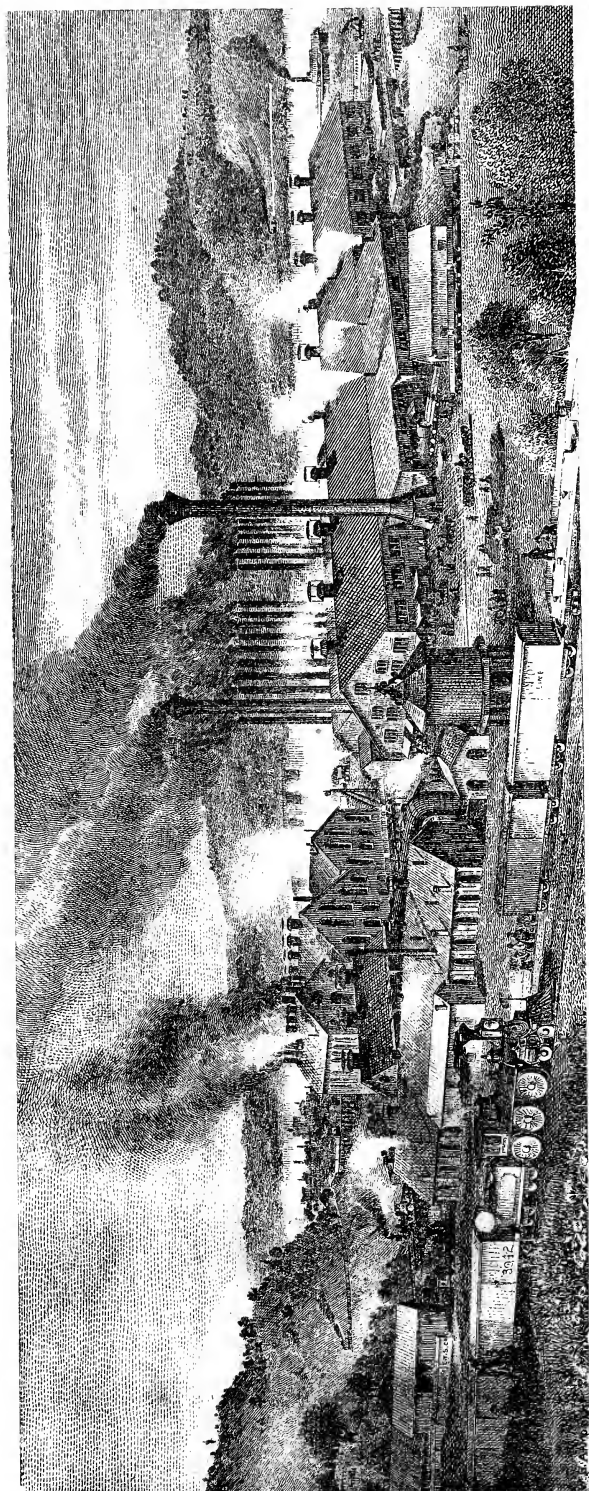
There are now at Pittsburgh ten steel manufacturing works, shown in the following table, who manufacture all descriptions of fine edge tool cast steel, agricultural steel, German or blister steel, saw steel, and in fact all varieties.

These ten works have in the aggregate 24 Siemens melting furnaces, 292 coke melting furnaces, 60 trains of rolls, 88 steam hammers, beside 18 helve and trip hammers, 60 puddling furnaces, 170 heating furnaces, 9 steel cementing furnaces, 5 open hearth furnaces. They employ an average of 2,000 hands, whose wages will amount to \$1,100,000. They use about 15,000 tons pig metal a year, and 21,500 tons of blooms and scrap steel, 1,000,000 fire brick, 950 tons fire clay, 2,500 tons ore, 3,000,000 bushels coal, 1,500,000 bushels coke. The space occupied by the works is 86 acres, and the capital in buildings, machinery and ground is about \$3,000,000. The annual product of steel is about 27,000 tons, worth \$4,200,000. The capacity is quite double the production, and the Pittsburgh mills could supply the entire demand of the county, if run to their full capacity. In steel, as in iron, Pittsburgh is the preponderating manufacturing community of the United States, and it is, as before observed, to the perseverance, pluck and business acumen of Pittsburgh steel manufacturers, that the country is to-day indebted for its emancipation from dependence upon foreign steel manufactories, and placed in an independent position, so far as supply of steel is in question, in all qualities, whether, for the arts and uses of peace, or the sterner demands of national defence.

STEEL WORKS.

Style of Works.	Style of Firm.	Office.	Establis'd	By.	Coke Melt- ing Holes.	24 Pots. Stemmen's.	Trains Rolls.	Steam Hammers.	Converting Furnaces.	Puddling Furnaces.	Heating Furnaces.	Capacity Tons.
Pittsburgh, . .	Anderson & Woods, . .	First av. and Ross.	1845	Isaac Jones,	48	4	10	16	6	3	25	7,000
Sheffield,	Singer, Nimick & Co. . .	82 Water street. .	1848	Singer, Nimick & Co.	30	4	12	11	8	12	17	12,000
—	Hussey, Wells & Co. . .	17th st. & Penn av.	1859	Hussey, Wells & Co.	75	6	9	13	—	16	20	13,000
Black Diamond,	Park Bros. & Co.	30th & Smallman.	1862	Park Bros. & Co. . .	72	2	6	21	—	6	48	10,000
La Belle,	Smith, Sutton & Co. . .	26 Ridge avenue.	1863	Reiter, Hartman & Co.	24	—	3	8	4	6	20	6,000
Duquesne,	J. S. Liggett,	Spruce & Market,	1865	Coleman, Rahm & Co.	—	—	1	2	1	—	5	—
Crescent,	Miller, Metcalf & Parkin	339 Liberty street.	1865	Barr & Parkin, . . .	34	4	4	6	3	—	8	4,000
Fort Pitt, . . .	Reese, Graff & Woods,	32d st. & Penn av.	1865	Reese, Graff & Dull,	12	2	3	5	2	6	20	—
Wayne,	Brown & Co.	Eleventh street. .	—*	Brown & Co.	24	1	—	2	2	—	—*	—
Pitt,	Jones, Ingold & Co. . .	4th av. & Smithfield	1875	C. E. Jones & Co. . .	—	1†	—	4	—	2	7	2,400

*See Rolling Mills. †1 natural gas furnace. These works were built in anticipation of natural gas, and have now from a well only through the first sand, sufficient gas to run the boiler and one melting furnace.



VIEW AT BRADDOCK'S FIELD.
AT THE EDGAR THOMSON STEEL WORKS.

THE EDGAR THOMSON STEEL WORKS.

The above company for the production of steel rails is a speciality among the steel works of Pittsburgh, being constructed and worked solely for the making of rails. The works are located at Bessemer, on the main line of the Pennsylvania railroad, and on the Connellsville division of the Baltimore & Ohio Railroad. They command also for transportation facilities the entire railroad system West and South, by a railroad bridge across the Monongahela river, forming a connection with the Pittsburgh, Cincinnati & St. Louis Railroad, while the Monongahela river, on which the company's grounds front for 3,000 feet, gives facilities of water carriage to and from its very doors over the whole Ohio and Mississippi system of navigation. In their location these works are a most admirable illustration of those receptive and distributive facilities enjoyed by Pittsburgh manufactories, which are stated in the chapter of this volume treating of the manufacturing advantages of the city.

Located on the very ground where Braddock's disastrous battle was fought and the English soldiers fell before the attack of the American Indian, the idea irresistably presents itself that on the same battle-ground one of the equally fierce contests of commerce is being carried on, and between English and American forces again.

For the whoop and yell of the Indian, the hills echo back the shrill voice of the steam whistle and the scape pipe. Where the clink of steel and the rattle of musketry filled the air, now resounds the clash and clank of machinery and the cheerful sounds of voices busy with the management and working of machinery, greets the ear, where, on "Braddock's direful day," the angry shouts and commands of contending warriors rose and fell with the varying fortunes of the battle. These works, standing thus on the very area of a famous frontier battle, are a striking illustration of the conquests of trade, the progress of civilization, and yet more so of the progress and growth of Pittsburgh. No grander monument to the growth of the nation, the progress of the city, or the triumph of American manufactures and of American mechanics, could well be built, than this complete and comprehensive steel works.

The whole area of ground is 106 acres, and the buildings now erected are: Cupola house, 107 feet long, 44 feet wide and 46 feet high. Converting house, 129 feet long, 84 feet wide and 30 feet high. House for blowing engines, 54 feet long, 48 feet wide and 36 feet high. Boiler house, 178 feet long, 40 feet wide and 18 feet high. Producer house, 90 feet long, 46 feet wide and 26 feet high. Rail mill, 380 feet long, 100 feet wide and 25 feet high, with a wing 100 feet long, 35 feet wide and 17 feet high. Office and shop building, 200 feet long, 60 feet wide and 18 feet high. A coal and iron house, 40 feet long, 20 feet wide and 10 feet high. The producer house and rail mill have iron side columns with timber side framing. All the others are wholly of brick, and all, without exception, have iron roof frames and coverings.

The machinery of the works is in full keeping with the size of the works, and designed to facilitate all the manufacturing processes. The converting machinery comprises 3 cupolas, 5 feet clear diameter and 40 feet high; 4 spiegel cupolas, 2 feet diameter and 40 feet high; two 12-tons cupola ladles upon scales; two 5-ton converters, 6 feet clear diameter by 15 feet high. Twelve crane ladles for casting, and a full equipment of ingot moulds and flasks for bottom casting. The steam machinery comprises 20 tubular boilers, 5 feet diameter by 15 feet long, each having forty $4\frac{1}{2}$ inch tubes.

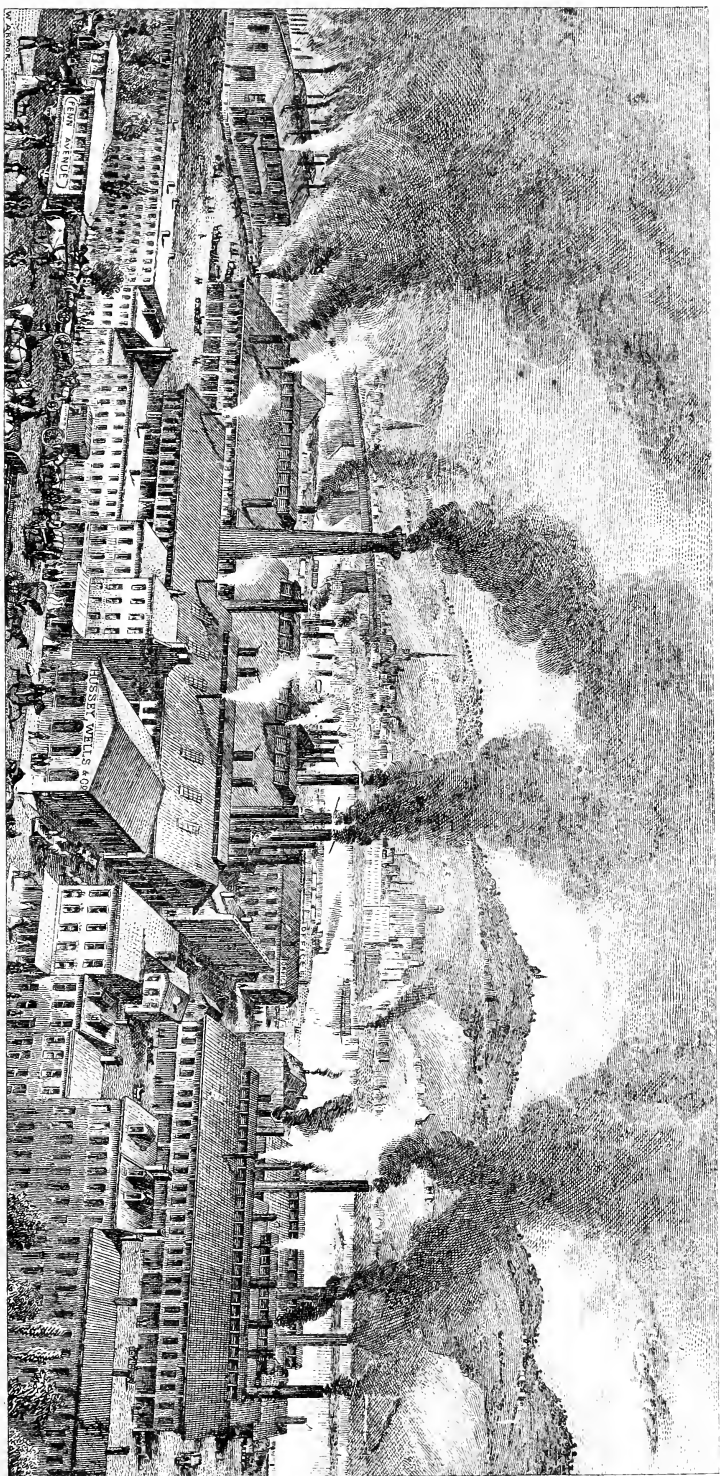
The two *blowing engines*, for the converters, have 42 inch steam cylinders, 54 inch air cylinders, and 48 inch stroke. Each has two 20 feet 20-ton fly wheels. A duplex blowing engine is used for the cupolas, with 18 inch steam cylinders, 60 inch air cylinders, and 36 inch stroke. A horizontal engine, in the cupola house, with an 18x24 inch cylinder, drives the crushing and grinding machines. A horizontal engine, 36 inch diameter by 48 inch stroke, with a 25 foot 50-ton fly wheel, drives the blooming mill; and a similar engine, 46 inch diameter by 48 inch stroke, drives the rail mill. A 3-ton hammer is placed for cutting the blooms and for such hot chipping as may be needed. An engine, 16 inches by 12 inches, drives the rail saws, and one 18 inches by 24 inches, the straightening presses, the slotting machines and the drills for fish plate holes.

THE HYDRAULIC MACHINERY comprises—One duplex pressure pump, with 25 inch steam cylinders, 9 inch water plungers, and 24 inch stroke, and one pressure pump, 20 inch and $7\frac{1}{4}$ inch by 15 inch stroke; a complete distributing apparatus, all the valves of which are connected to a common platform; two accumulators, $16\frac{1}{2}$ inch diameter by 9 feet stroke; a ladle crane, $15\frac{1}{2}$ inch diameter by 6 feet stroke; 4 cranes, 13 inch diameter by 9 feet stroke, three for lifting ingots and one for the bottom casting flasks; two cylinders, 18 inch diameter by 9 feet stroke, with racks and pinions for rotating the converters; one cylinder, 12 inch diameter by 24 inch stroke, fixed upon a car, for lifting and removing the bottoms of the converters; and two lifts, 9 inch diameter by 27 feet stroke, for raising materials in the cupola house.

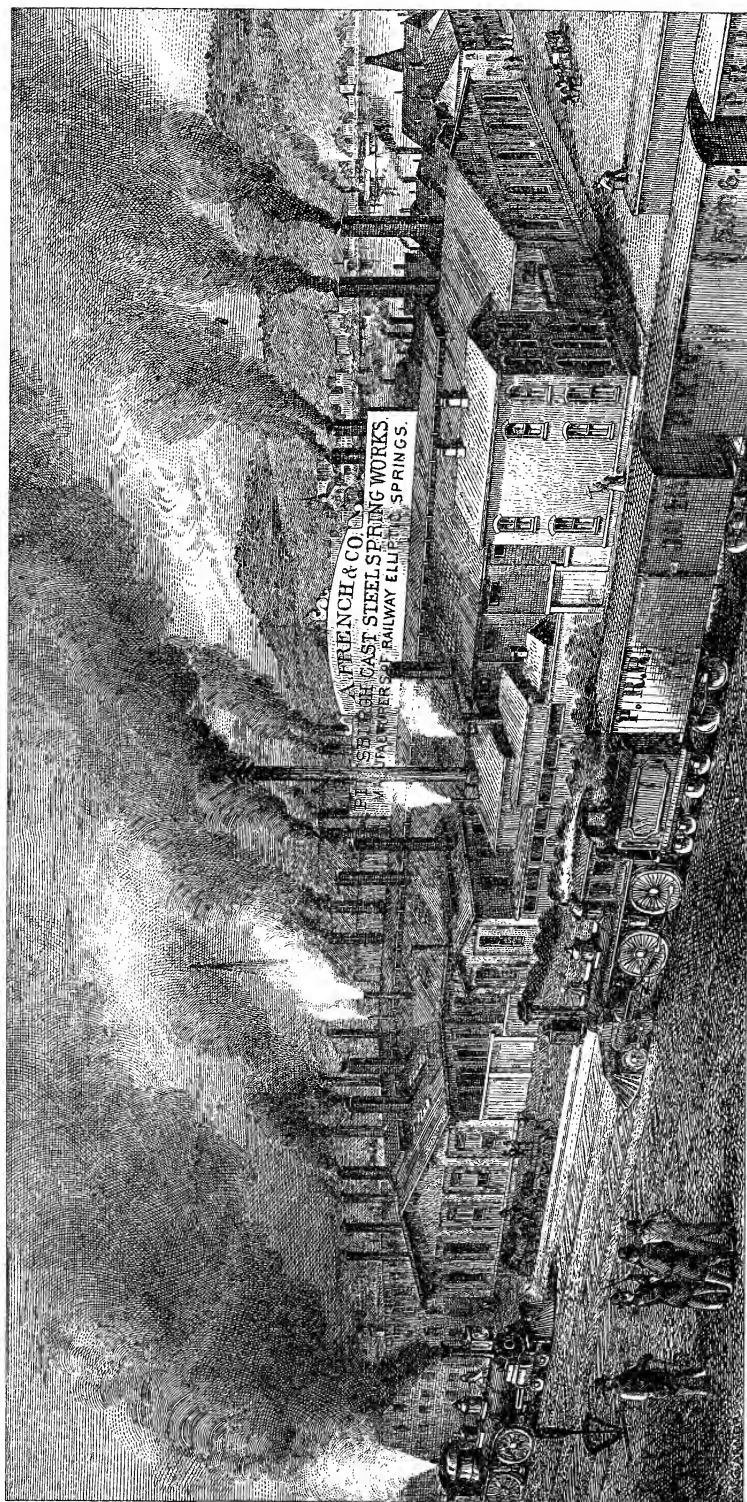
THE HEATING FURNACE PLANT comprises 20 gas producers in 5 blocks, 6 Siemen's furnaces, each 8 feet wide by 20 feet long, inside of the walls. There are two chimneys, each 6 feet clear diameter, and 98 feet high. Three of the furnaces will have hydraulic machinery for charging the ingots.

ROLLING MILL PLANT.—The ingots are bloomed in a 30 inch 3 high mill, which is fitted with feeding rollers, driven by an independent engine, and with hydraulic cylinders for moving the feeding tables, for turning over the ingots and for moving the middle roll to vary the sizes of the grooves as required. A "telegraph" leads to the hammer, and a steam crane piles up the ingots in the yard whenever it becomes inconvenient to take them direct to the re-heating furnaces for the rail train.

A 23 inch 3 high train, with 3 sets of rolls, is used for rolling rails. A line of driven rollers leads to the saw carriage, and a second line of driven rollers leads



James H. Smith del.
VIEW FROM COR. SEVENTEENTH STREET AND PENN AVENUE.
RUSSEY, WELLS & CO.'S STEEL WORKS.



American Engraver, N.Y.

VIEW AT CORNER OF TWENTY-FIRST STREET AND LIBERTY AVENUE.

AT A. FRENCH & CO.'S SPRING WORKS.

to a 60 feet hot straightening plate. The extent of the works is easily seen from the foregoing description. The capacity of the works is 200 tons ingots each twenty-four hours, and 225 tons of rails if rolled in double lengths, and 200 tons if rolled in single lengths. The works have made 220 tons on a single turn, and 4,000 to 4,500 tons in a month. The works employ 500 men, whose wages will average \$400,000 a year, and will consume 50,000 tons pig metal a year. The capital in the machinery, building and ground, is \$1,000,000.

ELLIPTIC CAST STEEL RAILWAY SPRINGS.

The construction of this article is another of those specialities of which so many are among the manufactures of Pittsburgh. The works were established in 1865 by six parties in Wisconsin, who selected Pittsburgh as the best site for their purposes, and employed then but six hands. In 1866, they were purchased out by Calvin Wells and A. French, who form the present firm of A. French & Co., by whom the works are now carried on at the corner of Twenty-first and Liberty streets. The factory occupies a space of 260 by 100 feet. Up to 1872, the works employed 100 hands, and consumed in that year 2,000 tons of steel, and the product was \$650,000. In the past year, owing to the depression of trade, the consumption of steel was only 1,000 tons; and but 60 hands are employed now, whose wages are \$36,000 a year, and about 20 tons of springs are daily made. The works have double the capacity of any other in the United States, and the capital in machinery, buildings and ground is stated at \$154,000.

Nearly all the passenger cars in the United States are running on this spring, and in the past two or three years 250 tons of them have been sent to Canada, and English orders filled.

CULMER SPIRAL SPRINGS.

The manufacture of spiral railway springs and buffers, under this patent, is of but recent date at Pittsburgh. The works were established in 1873, by the Culmer Spring Co., at the corner of Twenty-sixth and Liberty streets. The space occupied by the works is 100 by 100 feet, and the cost of the machinery and buildings \$20,000. Under their present scope of working they employ 16 hands, whose wages will amount to about \$12,000 a year. They consume 200 tons of steel, and their sales have already reached \$80,000 per annum. In this establishment the amount of raw material used is not to be taken as a criterion of the importance of the works, but rather the number of springs made; of these, however, no account can be given, as no record has been kept by the establishment of the number turned out. The works are at present but an embryo of a future growth.

STEEL CASTING.

This is a comparatively new class of steel manufacturing in Pittsburgh, and has been in operation about five years. The business is carried on by the Pittsburgh Steel Casting Company, at Twenty-sixth and Railroad streets, and also by the Crucible Steel Casting Company, Carson street, south side.

THE PITTSBURGH STEEL CASTING COMPANY was established in 1871, and the works occupy two and one-half acres of ground. The capital in machinery, buildings and grounds, is \$100,000. From a start with a few crucible fires, the establishment has increased until it now has nineteen smelting holes, one Siemens open hearth gas furnace, one Siemens pot furnace, gas furnace also, and a capacity of eleven tons per day.

Their annual produce is about 800 tons. There is an average of seventy-five men employed when running full, whose wages amount to \$60,000 a year, and there is consumed 300 tons of steel, 500 tons of wrought iron, 50,000 bushels of coal and 25,000 bushels of coke. Starting at first in a modest way, and operating under a patent method, they make castings of *genuine fine grained crucible cast steel*, capable of hardening, forging and temper-drawing, and which would make castings as fine as any material almost that is run into moulds, with sharp and perfect edges, smooth surface, and capable of coring, hollow work, interstice work, and yet free from blow holes and sand-mixed spots.

The company *claim* that their castings are of a superior strength, capable of high polish, and not porous as cast steel casting are, when made in any other way.

The full statistics or facts in relation to the CRUCIBLE STEEL CASTING COMPANY could not be obtained. It was built in 1875, has 3 steel converting furnaces, 8 steel melting holes, and a capacity of 600 net tons a year, and is only as yet in partial operation.

TOOL WORKS, AXE, SAW AND SHOVEL FACTORIES.

The making of tools is another important branch of the manufacturing business of Pittsburgh. While iron is largely used in their production, yet they are classed under the steel manufactures of the city, as being more of a steel manufacture. There are five manufactories, viz:

Firm.	Office.	Establ'd.	By.
Klein, Logan & Co. . .	33d and Railroad sts.	1856	J. C. Klein.
Kloman, Park & Co. . .	32d and Railroad sts.	1866	Kloman, Park & Co..
Hubbard, Bakewell & Co.	Dinwiddie & Colwell.	1847	Lippincott & Co..
Hussey, Binns & Co. . .	27th and Railroad sts.	1874	Hussey, Binns & Co.
Metcalf, Paul & Co. . .	331 Penn avenue.	1873	Metcalf, Paul & Co..

The variety of tools manufactured by these five establishments is large, and each one makes a special class of goods. The Verona Works, METCALF, PAUL & Co., make a specialty of railroad track tools, and is the only establishment *in the world*, that makes a solid eye solid steel pick. These picks are being supplied to the English market, where they are in much favor, and orders have been received from Russia for them.

A piece of bar steel of sufficient length to make a pick of desired weight, is heated and passed through a series of blocking, forming, roughing and finishing dies, nothing is taken from this piece, all the original stock remains, compressed

into a pick, solid steel, and solid eye, and guaranteed impossible to break, especially in the eye, by any usage to which a pick can be put.

The firm also make a specialty of solid steel tools, and have lately finished making a tool for cutting steel rails, in perfecting which two years' time has been spent.

The firm of HUSSEY, BINNS & Co. make a solid cast steel shovel, with socket and strap complete, an article previously unknown to the trade, each shovel wrought from a single ingot.

The firm of HUBBARD, LIPPINCOTT Co. are the only firm manufacturing saws, and make circular 6 inches to 6 feet 6 inches, and long cross-cut; mill, gang and muley saws from 3 feet to 14 feet in length. They manufacture also axes of several kinds, for which the works has a capacity of 100 dozen a day, their capacity for shovels being about the same.

The Iron City Works, KLOMAN, PARK & Co., make all descriptions of fine edge tools, and their goods have found, in addition to the home market, a demand in Germany, Australia and Canada.

KLEIN, LOGAN & Co. manufacture patent tubular eye picks, mattocks, and also rakes and fire shovels. These five factories occupy a space of 46 acres, and the capital in buildings, machinery and ground is about \$311,000. They employ 430 hands, whose wages in a year amount to \$210,000. About 725 tons of steel and 3,500 tons of iron are used in the production of their articles. 270,000 bushels of coal, and 180,000 bushels of coke, are consumed for fuel; and about 700 tons of grind stones a year. Their product will amount to \$545,000 annually.

FILES.

The manufacture of files is carried on by the EAGLE FILE WORKS, at Twentieth and Liberty streets, having the office at 50 Seventh avenue. These works were established in 1840, by John England, who then and in subsequent years employed five men. The works now employ thirty-five men, whose wages will amount to about \$18,000 a year. The capital in machinery and buildings is about \$30,000, and 16,000 dozen of files are turned out annually. The files of this works are cut altogether by hand; and using the best quality of steel, the reputation of the files is unsurpassed. About 60 tons of steel and 12,000 bushels of coal are consumed annually. Until a few years past nearly all the files in the United States were imported, now not one-fifth are of foreign make.

CRUCIBLE MANUFACTURERS.

There are three works producing crucibles for steel manufactories and other uses, but principally for the melting of steel, viz:

Firm.	Office.	Estab'd.	By.
McCullough, Dalzell & Co.	36th & Rail Road.	1871	McCullough, Dalzell & Co.
D. F. Agnew & Co. . . .	120 Rebecca st. . .	1872	D. F. Agnew & Co.
Hussey & Co.	49 Fifth avenue. .	1862	Hussey & Co.

These three works employ 57 hands, whose wages amount to \$42,000, and produce 200,000 crucibles, worth about \$400,000.

CHAPTER XVI.

THE OIL TRADE OF PITTSBURGH.

Although lard, linseed and other manufactured oils are made at Pittsburgh, yet by the oil trade is generally understood the transactions in crude and refined petroleum and its products. Fifteen years ago this business had no existence. It is the success which has followed the experiments in refining petroleum that has largely created the trade. By the refining process, this oil became an illuminator of great cheapness, and at once took the markets of the world from that reason, as well as by the beauty of its light, and added to the resources of the Nation another article of export, which in the fifteen years since its utilization has risen to the rank of third in values of our exportation.

It seems singular that Pittsburgh should have been within hand's reach, as may be said, of such wealth, and aware of its existence for years, and yet failed to benefit by a development of it at an earlier period. At some future day this fact will be classed among the singularities of commerce, as well as the fact that while the same substance had been freely obtained in other quarters of the globe for many years, it remained for the development of the oil regions of Pennsylvania to force the introduction of petroleum as an illuminator, upon the greater proportions of the civilized world. From very early days this *then called singular substance* was known by the merchants of Pittsburgh and the people of Venango and Clarion counties to exist in those localities, but was considered as one of the curiosities of nature rather than an available article for the purposes of commerce. Found oozing from the ground in very small quantities, or lying on the surface of water standing in small pits, evidently made by the Indians with reference to its collection; a few gallons was occasionally gathered by a process of skimming or absorption with blankets and brought to Pittsburgh by the timber men on their trips down the Allegheny with their rafts of timber. It had acquired an half-accepted, half-fabled reputation as a remedy for bruises, burns, sprains and rheumatism, and was occasionally burnt in its crude state as lamp oil in the vicinity of the pits from whence it was gathered. The dense black smoke produced from the burning of petroleum in its natural form, however presented an obstacle to its use as an illuminator, save where necessity required an occasional resort to it. The principal uses to which the small quantities which were then gathered were put, was as a species of patent medicine in the same rank as "Seneca" and "British Oil," as a similar substance was called. In 1859, Samuel M. Kier, lately deceased, began experimenting in the refining of

this oil; induced thereto by the manufacturing of what was then termed "coal oil," by distillation of bituminous coal, the results from which are similar in character to petroleum.

At that date, several corporations and companies had been formed at Pittsburgh for the manufacturing of coal oil from bituminous coal. Of these, the North American, in 1858, was the pioneer, being closely followed by the Lucesco in the same year, and by the Alladin in 1859. All three of these, however, in 1860-61, abandoned the distilling of coal oil and began refining petroleum; so that in reality it may be said that the increasing production of this oil called into existence in 1860, ten refineries of crude petroleum. From this time may be dated the oil trade of the city of Pittsburgh.

It is to the persevering efforts of Drake that Pittsburgh is indebted for the large trade in oil that she has enjoyed, and the United States for an article of export of such great value, and returning to the country so much real money. While the crude and refined petroleum now bought and sold in the markets of, and exported from the United States, is chiefly the produce of some three of the counties of Western Pennsylvania, yet the petroleum indications undoubtedly extend in an oblique belt or zone around the earth, and its course is distinctly marked by the districts where it is already obtained for market, and by the points at which it crops out, so to speak, in the shape of oil and burning springs. Beginning with the Canadian district and passing southwestwardly into the oil district of Pennsylvania, from thence to the Kanawha, then through Kentucky, finding the indications at various points, the belt passes into Arkansas, from thence to Utah, thence to California. Crossing the ocean it is found in Hindostan, from thence changing the direction to a northwestwardly course the belt passes to the burning springs of Persia and the "Naptha" of the neighborhood of the Caspian Sea. Still pursuing a northwestwardly direction to the petroleum wells of Wallachia, and finding traces through Germany, the British Isles are reached. Although no petroleum has as yet been found in them, the coal and peat districts furnish on distillation, coal oil. From thence crossing the Atlantic the Canadian districts from whence the departure was made, are reached, and the circle thus dotted out by actual production and unmistakable indications is completed. That this is one broad permanent belt of petroleum, remains for actual explorations of a long series of years to determine, but that at all the points indicated, greater or less quantities are to be obtained, is undoubtedly true. Such immense supplies of petroleum as this probable zone would seem to indicate, might almost on first impression lead to the conclusion that the obtaining of that article would soon be unprofitable; yet it should be recollected that the deposits of coal are no less, if not wider, in range. The progress of civilization as it occupies with fresh population and the manufacture and commerce thereof, the successive coal fields gives value to that mineral which, ponderous to transport, necessarily finds its consumption principally in the immediate district of its production,—while petroleum is transported thousands of miles to markets far removed from the

locality of its production. Petroleum, therefore, beside being more than an equal necessity to civilization than coal, possesses greater advantages of being transportable to consuming markets, long distances removed from its place of production. There would seem then to be no fear so long as petroleum continues the necessity it now is—taking the general facts in relation to the existence, value and production of that equal primary necessity, coal as a guide.

It may safely be assumed that until it is superseded in all its chief uses by some other article as abundantly found and as cheaply produced, the obtaining of petroleum will always be as profitable where judiciously prosecuted as the mining for any other mineral substance; and holders of tracts of good petroleum producing territory will be as wealthy in proportion as the possessor of coal, iron, or other producing mineral lands.

The idea of sinking a well for the procuring of oil in the Venango district, as conceived by Drake in 1859, was one of those pioneer thoughts that always mark an advance in the circles of commerce or manufacture. In this case, as in most others of a similar nature, the effort was met with ridicule, and the originator of the idea was obliged to prosecute his scheme through much discouragement; and although successful, met the fate of pecuniary ruin that marks the whole record of nearly all originators of advances in the developments in trade or manufacturing. Drake's success in proving that, by sinking a well, petroleum could be obtained in quantities, made an excitement rarely witnessed in the commercial history of any country. The story that oil was being pumped from the earth as freely as water, was at first scouted as a farce, then accepted as a phenomena, and then believed to be a defined fact pertaining to certain tracts. Men were prepared to believe from California experience, that it was possible gold might be found in such copious deposits that it could be gathered by the shovel full, but that real oil, excellent for burning, for lubricating and all the uses of oil, was being pumped from out the earth, in the interior of Pennsylvania, was beyond belief. When, after a time, it was announced that oil was not only pumped up, but that it gushed out of its own power, not by the gallon, but at the rate of hundreds of barrels a day, the excitement to embark in the business and to buy oil territory, became almost a mania. Company after company was formed, and from the judge upon the bench, the clergyman in the pulpit, to the servant in the kitchen or the stable, every one was investing in oil stocks, wells and territory. The rapidity with which the business developed was unexampled. The rise and decline of the "oil fever," as it was called, is too recent to need recalling in the minds of the present business generation. Whatever may have been the losses in the flow and ebb of speculation in oil strikes to individuals, the city of Pittsburgh has been a large gainer in the permanent establishment at Pittsburgh of a great trade in petroleum. The world as well has been greatly benefitted, perhaps to an extent unequalled by few other articles. In 1860 petroleum was unknown in France as an illuminator. In 1861 forty casks were sent there as a *curiosity*. In 1863 three thousand nine hundred and thirty-

four casks were shipped as a commercial adventure. In 1863 the demand for exportation was 29,197 casks. In 1864 there was sent to Marseilles alone over 66,000 casks. The amount exported from New York and other ports to foreign markets from 1869 to 1875, is shown in the following tables:

In 1868,	99,281,750 gals.	In 1872,	151,823,207 gals.
" 1869,	102,748,604 "	" 1873,	236,899,223 "
" 1870,	140,602,305 "	" 1874,	235,143,151 "
" 1871,	156,514,735 "	" 1875,	232,839,457 "

The benefits from the furnishing of this bulk of oil to the world for commercial, manufacturing and social purposes, is readily to be conceived, but not easily placed in statistical or other enumerated form. The benefits in a direct shape to Pittsburgh, are to some extent to be arrived at. As before mentioned, the success that followed the efforts of Drake to procure oil by boring, soon led to such quantities being offered in the market as at once brought it into use as an illuminator and a lubricator, and caused the erection of seven refineries at Pittsburgh in 1860.

In the following year, 1861, there were *seventeen* refineries added to those previously in existence; and in 1862 *nine* more were built; and in 1863 *fifteen* more were constructed.

From September, 1862, to September, 1863, the export of refined and crude petroleum and benzine from Pittsburgh to the East and West, *by railroad alone*, was 23,739,080 gallons, and a yet additional amount was sent West by steamboat, of which there is no record. During 1863 there was exported to foreign ports from the United States, 28,250,721 gallons. Of this amount there was shipped East from Pittsburgh 26,970,280 gallons, or nearly the entire foreign consumption. The value of this exportation *in New York*, in currency, was at an average of rates for that year, \$9,102,472, the average rates for that year in New York being 28 cents for crude and 44 $\frac{1}{4}$ cents for refined. The entire value of the oil trade of Pittsburgh for 1863, being nearly eleven million dollars.

In 1864 five additional refineries were put in operation. During that year the entire exportation to foreign ports was 31,872,972 gallons. The shipment from Pittsburgh for that year was 25,549,385 gallons, or 35,500 barrels less than in 1863. During this year the average rates for crude in New York, in currency, was 41 $\frac{7}{8}$ cents, and for refined 64 $\frac{2}{3}$ in bond. The value at these prices then, in New York, of the oil exported East from the city of Pittsburgh, was, in 1864, equal to \$13,610,411, and the entire trade of the city about fifteen millions.

In 1865 the entire exportations to foreign ports from the United States was 28,072,018 gallons, while the amount shipped east from Pittsburgh was 25,549,385 gallons. This was worth in Pittsburgh, at the average market rates for that year, \$9,929,096, the average rate for crude being 25 $\frac{3}{4}$ cents, and for refined 52 1-10 cents. The entire trade of the city may be estimated at twelve millions.

In 1866 the entire exportation to foreign ports was 67,142,296 gallons, while

the shipments east from Pittsburgh was 32,879,062. This was worth in Pittsburgh \$7,421,085, the aggregate rates for crude being $14\frac{1}{4}$ cents, and for refined $31\frac{1}{2}$ cents, and the entire oil trade of the city for that year did not reach ten millions.

For 1867 the exports to foreign ports were 62,600,685 gallons, and the shipments east from Pittsburgh 23,701,760 gallons. The average rate for crude was $10\frac{1}{4}$ cents, and for refined $44\frac{1}{2}$ cents. This would make the value of the oil shipped from Pittsburgh to the east \$6,655,286; and taking for the home consumption and western exportation an average of previous years in their proportions to eastern shipments, the entire oil trade of the city for 1867 may be put at about eight millions of dollars.

From these figures, most of which are from the actual statistics of exportations and recorded prices, it will be seen that from January, 1863, to January, 1867, a period of five years, the exportation of oil from the city of Pittsburgh brought to it a business and a circulation of money amounting to nearly forty-seven millions of dollars, while the whole trade in that period amounted to fifty-six millions, or an average of eleven millions yearly.

During those five years the entire exportation to foreign ports from the United States had been 217,948,692 gallons, and the shipments east from Pittsburgh been 132,396,179 gallons, showing that *Pittsburgh supplied over sixty per cent. of the whole foreign exportation of petroleum up to 1867.* At that time there were fifty-eight refineries in the city of Pittsburgh and suburbs; of these fifty-one were in operation, and seven were idle. These refineries employed about 700 hands, whose yearly wages amounted to \$560,000. The refining capacity of these refineries was equal to 31,500 barrels a week. The capital invested in buildings, machinery, &c., was then estimated to be \$7,630,000, and in tanks, barges, &c., about \$5,432,000. Nearly the entire amount of these sums invested had been distributed among the other branches of manufacturing in Pittsburgh; having thus added to the business of the city in five years nearly thirteen millions of dollars. There was also expended in repairs annually a sum which, it is estimated, amounted to 10 per cent. upon the value of the investments in the refineries, barges, tanks, &c., or an annual expenditure of over one and a quarter millions per annum among the workshops of the city.

There were at that time thirty-five Oil Brokers, or Oil Commission Houses, doing business in the city, which, with the fifty-eight firms running the refineries, makes nearly one hundred new business houses added to the city in the same space of time. The oil business had also brought into operation in the city cooperages turning out about 7,000 barrels per week, the value of whose work is nearly one million of dollars yearly.

It would seem, then, that petroleum had added to the aggregate business of Pittsburgh in those last five years over seventy-one millions of dollars, besides distributing in the community for labor *directly connected with the refineries* a sum equal to nearly three millions of wages.

From this brief sketch of the petroleum business of Pittsburgh up to 1867, the reader will be enabled to form some idea of the flood of benefit to the world, as well as to Pittsburgh, that came pouring into the business world with the flood of oil from Western Pennsylvania. The earlier years of the petroleum mining—if that term may be used for oil—was one of a speculative character, touching almost the verge of gambling. The natural geological peculiarities of the oil region, the lay of the oil bearing sand stones, and all the “metes and bounds” that in any legitimate business give standard character to its prosecution, were wanting. The purchase of a tract of oil territory, or the sinking of wells, were without any defined rules or probabilities, beyond the accepted conditions of “good” or “bad luck.” To-day the boring for oil and the entire constitution of the production of crude and refined oil, is on the basis of a legitimate business. The romance and excitement of the early days of the oil business have gone, and the production of petroleum and its products stand in the business world side by side with iron, coal or copper. The experience of the past has formulated the depths of the earth through which the well is sunk, and given intelligence to each strata of sand through which the drill passes, so that he who bores may read. Exploration and test have mapped the underground currents of oil almost as accurately as the surveyor the water courses on the surface; and the purchase of territory or the sinking of a well is to-day undertaken with a reasonable degree of assurance, almost approaching that with which the mining for other minerals is prosecuted.

Under these things, and the establishment in all the markets of the world of refined petroleum as the chief illuminator, in the absence of gas, the oil trade of Pittsburgh has become a standard business, and, as will be seen from statistics presented, an increasing and valuable branch of the manufacture and commerce of the city. The commercial value of that business, it will not fail to be noticed, is, however, less than in 1865–6–7, although its bulk in material and all other respects has so greatly increased. The extreme low rates that have prevailed the past three years are sufficient reason for this, and will not be without its compensations in the future in the centering here in that business of so much commercial and manufacturing activity, intelligence and capital, whose effect will be in a more remunerative condition of the market to hold here the chief benefits of such a condition.

The following table presents the oil refineries now at Pittsburgh, with the date of their establishment as accurately as could be ascertained, together with their actual capacity in crude oil. The tankage capacity in the subjoined refineries is equal to 784,181 barrels:

Style of Works.	Style of Firm.	Office.	Estab'd.	By.	Barrels Crude. Capacity weekly.
American,	Holdship & Irwin,	49 Fifth avenue.	—	Forsythe & Co.	6,828
Aladdin,	Aladdin Oil Co.	83 Fourth avenue.	1859	Aladdin Oil Co.	1,017
Brilliant,	Lockhart & Frew,	174 Wood street.	1861	Lockhart & Frew,	12,078
Bly's,	David Bly & Co.	Duquesne way, near 9th st.	1864	David Bly,	2,400
Cosmos,	R. S. Waring,	49 Fifth avenue.	—	—	7,304
Citizens,	Citizens Oil Works,	7th st. and Duquesne way.	1868	Citizens Oil Refining Co.	7,072
Central,	Central Refining Co.	20 Fifth avenue.	1873	Central Refining Co.	21,867
Crystal,	Livingston Bros.	7th st. and Duquesne way.	1862	John Meyer & Co.	2,624
Eagle,	Wm. P. Logan & Co.	Fifth avenue.	1860	Wightman & Anderson,	2,444
Empire,	David Richard,	—	1863	Trauerman, Marks & Co.	660
Federal,	King & Goodman,	8th st. and Duquesne way.	1864	James Bowery,	2,456
Fairview,	D. Hostetter,	—	—	—	2,136
Iron City,	John Speer & Co.	8th st. and Duquesne way.	1862	Wade Hampton,	1,500
Keystone,	Ph. Weisenberger & Co.	8th st. and Duquesne way.	1863	P. Weisenberger & Co.	1,018
Liona,	J. C. Kirkpatrick & Co.	3 Eighth street.	1863	A. W. Kraft & Co.	564
Lilly,	Brooks, Ballentine & Co.	7th st. and Duquesne way.	1862	Brooks & Co.	2,072
Liberty,	John A. McKee & Son,	56 Fifth avenue.	1861	McKee, Hackett & Co.	5,948
Model,	Model Refining Co.	7th st. and Duquesne way.	1867	Model Refining Co.	3,233
Miller's,	A. D. Miller,	Washington & Preble aves.	—	—	5,238
National,	Standard Oil Co.	7th st. and Duquesne way.	1862	National Oil Co.	5,538
Nonpareil,	Lockhart & Frew,	174 Wood street.	1864	B. W. Morgan & Co.	1,318
Penn.,	H. S. A. Stewart,	8th st. and Duquesne way.	—	Sproul & Co.	1,854
Peerless,	Central Refining Co.	20 Fifth avenue.	—	—	3,758
Petrolite,	Wormser, Meyers & Co.	47 Market street.	1861	Wormser, Meyers & Co.	1,703
Radiant,	J. T. Stockdale,	8th st. and Duquesne way.	1864	—	1,906
Riverside,	Elkins & Flack,	9th st. and Duquesne way.	1870	Elkins, Bly & Co.	1,809
Star,	E. J. Waring,	49 Fifth avenue,	—	—	3,718
Standard,	Standard Oil Co.	7th st. and Duquesne way.	1862	Standard Oil Co.	7,250
Vesta,	R. S. Waring,	49 Fifth avenue.	1867	Montzheimer, Koehler & Co.	9,058

From this it would appear that there are twenty-nine oil refineries in Pittsburgh, having 138 stills, with a weekly capacity of distillation of Crude Petroleum of 126,371 barrels a week, or a capacity of production of 95,000 barrels refined oil weekly, which, if they all run full time for 48 weeks, would equal 4,560,000 barrels a year. This is a decrease from the number of refineries in 1866, of just fifty per cent.; but it is *an increase of two hundred per cent.* in refining capacity in ten years. There being 58 refineries with a weekly capacity of 31,500 barrels, in 1866, as against 29 refineries, with a weekly capacity of 93,000 barrels refined oil, in 1876. Although the refineries of 1875-6, are not run to anything like their full capacity, yet the proportionate increase in capacity is maintained in actual results under the partial running of the works. In 1866 the exportation of refined oil from Pittsburgh, by railroad to the East alone, was 424,848 barrels; and in 1874 it was 1,247,641: being in the actual amount of oil refined an increase over the trade of 1866 of 849,696 barrels, or quite two hundred per cent., in perfect unity with the increase of refining capacity, and demonstrating an absolute increase of that proportion in the oil trade in ten years, as shown by shipments to the East alone. To this is to be added those to the West and by river. In 1875, this increase fell off from inability of Pittsburgh refineries to ship profitably, owing to the schedule of railroad freights, by which Cleveland was enabled to enter the market more advantageously. The decrease caused by this freight discrimination was equal to 150,553 barrels; but even under this disadvantage the showing is still, in an exceptional year, a gain of one hundred and sixty per cent. in the volume of trade in ten years. This decrease is one of the temporary incidents that occur in all great traffics, and has but resulted in opening other avenues for shipment, that will, during this year, not only show a return to the full two hundred per cent. of increase in trade in the past decade, but gives evidence of a yet further increase.

Pittsburgh is the natural refining point of the oil of Western Pennsylvania. The city should have the entire refining of all the oil of Western Pennsylvania if facility to do so cheaply is to be the dominating motive, and she will at a future day obtain it. There is no doubt that the control of this business has by some mistake been for a time lost. The facts however that refining can be done here cheaper than at any point by reason of facilities that exist; placed in packages at less cost from similar reason; and that the oil is, in being carried to the refineries at Pittsburgh, transported a portion of the distance required to reach its foreign markets, must, as it has, exert a powerful influence in rendering Pittsburgh the chief refinery of the United States. The oil exported to foreign ports in 1875 was equal to 5,545,987 barrels; or, after deducting therefrom the crude exported, about the capacity of Pittsburgh's refineries. In the chapter of this volume on the geographical position of Pittsburgh, and in that on its manufacturing advantages, the great value of the Ohio river to the city is dwelt upon. To-day, under the restrictions that railroad freight schedules have placed on the growth of the oil trade of the city, the Ohio river becomes the means of

emancipating the shippers of oil, and demonstrates its power to aid the growth of the business of the city as fully as the friends of the improvement of its navigation by the government could wish. Under inability of Pittsburgh refineries to obtain freights over the Pennsylvania and Baltimore & Ohio railroads at rates that would enable them to enter the eastern and foreign markets on equal terms with refineries at other points, the Ohio river has been resorted to to reach an eastern sea port. Oil now finds transportation at a cost of freight that is profitable to the Pittsburgh oil trade, by way of the Ohio river to Huntingdon, in West Virginia, and thence by the Ohio & Chesapeake Railroad to the city of Richmond. As statistics show that the Ohio river is rarely closed one month in the year by ice, it is apparent that a competing freight route to the East is permanently open to the oil trade, and other branches of business as well. Under the natural laws of trade, this will ultimately result in justifiable freights being accorded by other routes. Pittsburgh, then, under cheapness of not only of refining and packing, but freights as well, should regain that full control of the refining business of Western Pennsylvania she should always have held. The virtue of her position as a half way point between the point of production of the crude and its eastern market, at which refining can be cheaper prosecuted than elsewhere, gives her the opportunity, if her people exert the will. Should they do so, the full refining capacity shown to exist here, may be used. When, under the disadvantages in shipping mentioned, the trade has increased from 1866 to 1876 two hundred per cent. in its bulk of material handled, is its greater increase under the shipping facilities opened much to anticipate?

At the present time the oil trade of Pittsburgh is one of great magnitude. The following table shows the receipts of crude oil for the years specified at Pittsburgh:

	Barrels.		Barrels.
1859,	7,663	1868,	1,031,227
1860,	17,161	1869,	1,028,902
1861,	94,102	1870,	1,050,810
1862,	171,774	1871,	1,146,492
1863,	175,181	1872,	1,186,501
1864,	208,744	1873,	2,035,182
1865,	630,246	1874,	1,648,253
1866,	1,263,326	1875,	1,858,301
1867,	727,494		

The subjoined table exhibits the shipments by rail to the East in the eleven years given:

	Barrels.		Barrels.
1865,	298,111	1871,	733,943
1866,	424,848	1872,	743,510
1867,	498,221	1873,	869,946
1868,	724,991	1874,	1,247,641
1869,	596,475	1875,	1,097,086
1870,	811,158		

The following table gives the average production for the past seven years of the Pennsylvania oil regions:

	Bbbs. a day.	Bbbs. a year.		Bbbs. a day.	Bbbs. a year.
1869,	11,529	3,458,700	1873,	27,098	6,129,600
1870,	15,479	3,642,700	1874,	29,363	8,778,900
1871,	15,879	3,763,700	1875,	23,212	6,963,600
1872,	17,243	5,172,900			

The totals for the year are arbitrarily computed on 300 days working each year. It is not asserted that that is the average time, as many of the wells flowing would produce 365 days, yet, as the pumping wells would necessarily, from various causes, lose many days; the data assumed is, perhaps, on the average not far from exact. By a comparison of the table it will be seen that in the proportionate increase of production at the wells and shipments of crude, and exportation of refined from Pittsburgh, that the oil trade of the city in its increase, keeps pace even under the disadvantages previously stated, with the increase of production.

The value of the products of the refineries of Pittsburgh, as a money item in the whole bulk of the city's commerce is, under the very low prices that have rated in the past two or three years, presented at a disadvantage. It is, however, a handsome aggregate at even those prices. The aggregate for 1875 has been, estimating 42 gals. to the barrel, about \$4.50 per barrel, at which rate the shipments of refined would amount to \$4,936,369. The production of this amount of refined oil would require 600 hands, whose wages would average about \$300,000. The refining used 41,500 carboys of acid, worth \$130,985; also 234,300 lbs. of caustic soda, worth \$12,472; rosin to the amount of 88,000 lbs., worth about \$1,300; paint to the amount of 275,000 lbs., worth \$19,250; also, 220,000 lbs. of glue, worth about \$33,000. The barrels would require about ten pounds of iron to each barrel, which would be about 5,500 tons of hoop iron, worth \$440,000, and the barrels at a rate of \$1.25 each, would aggregate to a cost value of \$1,371,500. The space occupied by these 29 refineries is 378 acres, and the capital in the machinery, buildings and grounds is about \$2,248,000, as nearly as can be arrived at. The refining of oil, while it is the largest portion of the oil trade of the city, does not embrace all the transactions therein. There are, in addition to the refineries, the following manufactures of

LUBRICATING OIL.

Firm.	Office.	Etabl'd.	By.
Mills, King & Co.	1 Eighth street. . .	1866	A. B. Mills.
H. M. Graham.	27 Seventh street.	1874	H. M. Graham & Co.
F. Mason.	2 Seventh street. . .	1862	Mason & Pease.
Paine, Ablett & Co. . . .	27 Seventh street.	1871	Paine, Ablett & Tripp.
Grim & Bros.	236 Penn avenue. . .	—	Grim Bros.
S. M. Hebron & Co. . . .	2 Duquesne way. . .		

These firms handle about 30,000 barrels of lubricating oil a year, whose value is \$210,000. In addition there are a number of dealers or brokers in oil, but the statistics of their business is so largely included in that of the oil refineries and the general statistics of the petroleum trade, that their presentation would be nearly, if not quite, a duplication of the figures already given of the receipts of crude oils and the shipments of refined.

There is, in addition to the product of petroleum, three

MANUFACTORIES OF LARD OIL.

Firm.	Office.	Establ'd.	By.
James Dalzell & Co. . .	70 Water street. .	1826	James Dalzell.
F. Sellers & Co. . . .	329 Penn avenue. .	1848	F. Sellers & Co.
Reese, Owens & Co. . .	21 Seventh avenue	1870	Reese Owens & Co.

These firms have 165 presses; their capacity in consumption in lard and production no figures could be had.

There are also two firms manufacturing

LINSEED OIL.

Firm.	Office.	Establ'd.	By.
M. B. Suydam.	Rebecca and Craig	1856	M. B. Suydam.
Thompson & Lyons. . .	West Diamond. . .	—	De Haven.

These two employ 26 hands, whose wages will average \$13,520 yearly. They use 143,000 bushels seed a year, produce 143,000 gallons of oil, and 3,000 tons oil cake. They employ 6 horses and two wagons, and the capital in machinery and buildings is \$65,000. The space occupied by the factories is 10,000 square feet, and their sales average \$200,000 annually.

CHAPTER XVII.

LEAD. COPPER AND BRASS.

PIG LEAD.

The production of this metal is carried on by but one establishment in this city. The Pennsylvania Lead Co., whose office is at the corner of Wood street and Third avenue, was established in 1875 for the purpose of producing lead from the ores and base bullion brought from Colorado, Utah and California. The establishment also uses ores from Mexico. There are employed in the processes eighty men whose wages average from \$60,000 to \$70,000 a year. The freights amount yearly to over \$400,000; and there is 600,000 bushels of coal and 200,000 bushels of coke consumed a year. There is also used 3,500 tons of iron cinder, 1,500 tons of limestone, and 150 tons of metallic zinc a year. The product is given as from 750 to 1,000 ounces of silver a year, worth \$1,400,000, and 8,500 tons pig lead worth \$1,200,000. The product of lead is disposed of to manufacturers in New York, Philadelphia and Baltimore, as well as at Pittsburgh.

WHITE LEAD.

The manufacture of red lead is mentioned in 1810 as having been carried on in Pittsburgh, when in the list given by the census, there were enumerated three red lead factories, producing leads to value of \$13,100. In 1813 there is noticed in Cramer's Almanack, "one white lead factory (Beelin's)." In 1817 the committee of Councils reported one white lead factory, employing six hands and producing leads to value of \$40,000. In 1837 there were eight lead factories, producing 74,496 kegs of leads valued at \$206,000. In 1857 there were three firms employing 65 hands, whose product of white and red lead was valued at \$443,000.

It will be noticed on a comparison of the white lead business of 1857 with that of 1837, that there is a falling off of five factories, but it will also be observed that the three factories of 1857 produce 2,754 tons of lead, where eight factories of 1837 produce 902 tons. being an increase of over two hundred per cent.

In 1876 there are seven white lead factories in operation, and one which, from business complications, has been closed for the past three years. The six in operation are

Firm.	Office.	Established.	Who By.
T. H. Nevin & Co. . . .	67 Fourth ave.	1841	T. H. Nevin & Co.
C. A. Wells & Co. . . .	42 Fifth ave. .	1864	B. A. Fahnestock.
Fahnestock White Lead Co.	76 Wood st. .	—	Fahnestock White Lead Co
Davis, Chambers & Co..	167 First ave.	1866	Davis, Chambers & Co.
Beymer, Bauman & Co.	42 Fifth ave. .	1867	Beymer, Bauman & Co.
Armstrong & McKelvey.	37 Wood st. .	1870	Armstrong, McKelvey & Co

These factories employ about 175 hands, whose wages will average \$100,000 annually. They use 5,000 tons of pig lead, and produce about 200,000 kegs of paint leads of twenty-five pounds each. The space occupied by the factories is equal to three acres, and the capital in machinery, buildings and ground is about \$450,000. There is consumed in the manufacture 150,000 gallons of linseed oil, and about 250,000 pounds of acetic acid. The value of the kegs used in packing is \$50,000.

COPPER MILLS.

There are two copper rolling mills at Pittsburgh, and one copper smelting works. The smelting were works originally established to smelt the product of the famous Cliff Mine. It is not now in operation. The rolling mills are those of

Firm.	Office.	Estab'd.	By.
C. G. Hussey & Co.,	49 Fifth avenue,	—	C. G. Hussey & Co.
Park & Co.	122 Second avenue.	1859.	Park, McCurdy & Co.

These two establishments produce copper in its various rolled forms, and employ about 100 hands, whose wages will amount to an average of \$75,000 a year. They consume about 1,100 tons of coke and ingot copper, and produce from \$600,000 to \$700,000 of rolled and stamped copper. The space occupied by the works is about seven acres, and the capital in machinery, buildings and ground, is given at \$276,000.

BRASS FOUNDRIES.

There are ten brass foundries in Pittsburgh.

Firm.	Office.	Estab'd.	By
Loughrey & Colls,	131 First st.	1820.	John Sheriff.
A. Fulton's Sons & Co.	91 First avenue,	1832.	A. Fulton.
Bailey, Farrell & Co.,	167 Smithfield st.	1840.	Geo. Bailey,
Craig Bros.,	139 Second ave.	1845.	Gallegher & Co.
Mansfield & Co.,	13 Second ave.	1861.	Mansfield & Fitzimmons.
John Fitzimmons,	1st and Carson,	1861.	Mansfield & Fitzimmons.
Atwood & McCaffrey,	50 to 60 Third av.	1865.	Atwood & McCaffrey.
J. B. Sheriff & Son,	68 Water st.	1864.	Sheriff & Loughrey.
S. Cadman & Son,	Duq'ne way, n. 6th,	1863.	Cadman & Crawford.
Wilson, Snyder & Co.,	Third av. & Liberty,	1875.	Wilson & Snyder.

These ten establishments consume 218 tons copper, 266 tons scrap brass, 1,700 crucibles, 100 tons lead, 22 tons of tin, 37,000 lbs. of antimony, 60,000 bush. coke, 60,000 bush. coal in a year, and employ 35 moulders, whose wages will amount to about \$25,000 a year. The works occupy an area equal to 2 acres of ground; and the capital in buildings, machinery and ground is \$216,000.

BELL FOUNDRY.

There is one manufactory of this class. It was established in 1832, by Andrew Fulton, and is now carried on by A. Fulton's Son & Co. This establishment has long been well known throughout the western rivers. One of Andy Fulton's bells being for years a necessity for every western steamboat. Bells from this establishment have been sent to fill orders from China and South America. The statistics of this establishment would be interesting, on account of the many and various sections of the earth where bells from this establishment have rung; but no satisfactory information could be obtained.

BRITANNIA WARE FACTORIES.

There are two firms who manufacture this metal, viz:

Firm.	Office.	Establ'd.	By.
Collins & Wright. . .	185 First avenue.	1834	Orin Newton.
Lang & Luster. . .	104 Madison av. .	1862	Lang & Luster.

These two factories employ 52 hands, whose wages will average \$30,000. They consume about 100 tons of the various metals they use in their mixtures, and their product is \$90,000 a year.

CHAPTER XVIII.

COTTON AND WOOL MANUFACTURING.

Although a cotton factory was among the earliest manufactories established at Pittsburgh, and from its easy access to the cotton growing region, and its great facilities for distribution of the manufactured product, it is reasonable to expect cotton manufactures to be among the most progressive of Pittsburgh manufactures, yet such has not been the case. Though those which have been established have been profitable to those interested, yet the amount of cotton manufacturing has not been as large as might be expected.

Cotton cloths, cotton yarns and batting are, however, among the larger branches of Pittsburgh manufactures. The first mention of this manufacture in Pittsburgh, we find in Cramer's Almanack for 1804, where in "a view of the manufacturing trade of Pittsburgh," is the following remark: "Carded and spun cotton by the carding machine and spinning jenny, \$1,000." In 1806 the same publication notices, "one cotton manufactory which can spin 120 threads at a time." In 1808 the cotton factory is mentioned as producing cotton yarns, &c., "to the great credit and profit of its industrious proprietor." In 1810 there were two cotton mills, one "working 60 spindles, and the other contemplates working shortly 234 spindles." The value of their manufactures is set down at \$20,000. In 1817 there were "two cotton spinners," as they are called in the report of the committee of Councils, who employed 36 hands and manufactured cotton to amount of \$25,518. In 1837 there were six cotton factories, using 6,200 bales of cotton, running 21,800 spindles, employing 900 hands, and turning out cotton goods to the value of \$770,000.

In 1857 there were five cotton factories, having 33,666 spindles, 659 looms, 187 cards, employing 1,330 hands, and using 12,000 bales of cotton. They produced sheetings, cotton yarns, battings and tickings, and cotton cordage, to the value of \$1,269,655;* being an increase for twenty years, from 1837, of about forty-five per cent. In 1876 there are five cotton mills:

*Over valuation at that date.

Style of Mill.	Firm.	Office.	Establ'd.	By.
Anchor. . .	{ Birmingham, Wat- son Co. }	Robinson and Balkam sts. }	1828	Blackwell, Bell & Co.
Banner. . .	{ Eagle Cotton Mills Company. }	— }	1886	Voeghtly & Bro.
Eagle. . . .	{ Eagle Cotton Mills Company. }	Robinson and Sandusky sts }	1832	Arbuckle & Avery.
Franklin. .	E. Hyde's Sons.	West Canal.		E. Hyde.
Penn. . . .	{ Kennedy, Childs & Company. }	38 River ave- nue. }	1846	Kennedy, Childs & Co.

These mills have the following machinery, and make the subjoined consump-
tions:

	Spindles.	Looms.	Cards.	Hands.	Wages.	Bales Cotton.
Anchor,	11,000	271	40	300	60,000	2,000
Franklin,	2,000	—	20	80	15,000	900
Banner,	3,600	32	57	150	32,000	2,500
Eagle,	9,700	220	87	260	50,000	3,000
Penn,	9,000	227	121	300	60,000	3,000

They produce as follows:

Name of Mill.	Yards of Sheeting.	Value.	Card Yarns.	Value.	Pounds of Batting.	Value.	Bags.	Value.
Anchor, .	3,000,000	\$210,000	—	—	30,000	\$3,750	—	—
Franklin,	—	—	350,000	\$70,000	—	—	—	—
Banner, .	—	—	500,000	100,000	150,000	18,750	340,300	71,000
Eagle, . .	3,150,000	220,000	25,000	5,000	90,000	15,300	—	—
Penn. . .	2,500,000	175,000	150,000	30,000	30,000	37,500	200,000	42,000

The value of machinery, buildings and grounds is \$800,000, and the space occupied is four acres.

WOOLEN FACTORIES.

This is another class of manufacturing which, from the locality, is one that might reasonably be expected to be prominent among the manufactures of Pittsburgh,—there seems to be the same retardation in this as in cotton. There are two factories:

Firm.	Office.	Establ'd.	By.
C. Reel & Co.	12 Church avenue.	1841	C. Reel.
S. Bradley & Son. . .	River av. & Balkam	1857	S. Bradley.

These running full time employ 58 hands, whose wages will average \$15,000 yearly. The consumption of wool is about 225,000 pounds, and the product \$125,000. They manufacture blankets, yarns, jeans, flannels, satinets, &c.

CHAPTER XIX.

MANUFACTURES FROM EARTHY SUBSTANCES.

SALT.

As an article of trade, salt is one of the staples of Pittsburgh; and although, from the low price at which it is sold, it does not present so imposing a front as some other articles, yet it is deserving of a distinct and separate mention as one of the sources of her wealth. Until the beginning of 1796, Pittsburgh was supplied with salt from the eastern cities, packed across the mountain on horses and in wagons, at a high rate of freight. In the beginning of that year Quartermaster General James O'Hara had occasion to visit Niagara. He there ascertained that salt could be brought to Pittsburgh cheaper from the Onondaga works in New York State than from the eastern cities. And he was instrumental in causing large quantities to be brought by the way of Lake Erie, and thence to Pittsburgh by Le Boeuf and French creeks and the Allegheny river. The supply from this source was continued until 1810, when the manufacture of salt on the Kanawha came into competition with the New York works, whose supply was, in 1812, entirely cut off by the war. The opening of the salt works on the Kiskiminetas and the Allegheny, produced a third revolution in the salt trade. For a period of several years, the salt wells of the Kiskiminetas furnished the chief supplies to the Pittsburgh market of this staple. Of late years it is obtained nearer home, and but little is now brought to the city from the Allegheny region. Salt water, it is now demonstrated, can be obtained in great abundance at almost any point in and around the city of Pittsburgh, and a number of salt works are in operation in the city which are supplied with salt water obtained from wells sunk in the city's area. While this volume has been printing, a large flow of exceedingly strong salt water was developed in a well being sunk in the very heart of the city, for the purpose of obtaining the natural gas, mentioned in the chapter on manufacturing advantages, and with the salt water, gas enough was struck to manufacture the water into merchant salt. This is not singular, and creates no surprise, from the fact before stated, that a flow of salt water can be obtained in most any quarter of the city. There is in the Sixth ward of the city of Allegheny, several wells now being operated; also in the Thirty-sixth ward, Pittsburgh. In one of these, which is 1,600 feet deep, the water is forced by pressure of the natural gas up the entire distance, and from 40 to 60 feet above the mouth of the tube, flowing from 8 to 900 barrels of salt water a day, and the escaping gas is sufficient to light the works and heat it.

This well was originally sunk in 1860, with a view of "striking oil," and bored to a depth of 750 feet, at which depth salt water was obtained. It was re-bored in 1868 to its present depth, with the results stated. The large veins of gas corresponding to those in Butler and Venango counties, are supposed to exist at a depth of 2,200 to 2,500 feet, to which depth wells are now being sunk. When this gaseous fuel is obtained in the quantities expected, neither the fuel or the water for the manufacture of salt will cost anything beyond the cost of boring and tubing the well, and the salt factories of Pittsburgh will be without rivalry in the cheap product of the article. There are assuredly most wonderful natural advantages of almost every description centered at Pittsburgh. There are at present in the city of Pittsburgh, four salt factories. making salt from the water obtained from beneath the very streets, viz:

Firm.	Office.	Establ'd.	By.
Graham & Allen. . .	254 Beaver avenue. .	1868	W. B Ross.
Haller, Beck & Co. .	Western & Beaver avs	1868	Haller, Beck & Co.
Haller, Beck & Co. .	Chestnut, 36th ward.	1824	— Anshutz.
W. C. & J. M. Taylor.	Walnut st, 36th ward.	1871	W. C. & J. M. Taylor.

These salt wells employ 34 men, whose wages will average \$14,000 a year. They produce about 75,000 barrels of salt a year, worth from \$100,000 to \$120,000.

EARTHENWARE

Is manufactured by one firm, the Great Western Pottery Co., 363 Liberty street, established by this company in 1874, who employ 40 hands, whose wages amount to \$20,000; occupy about one-half acre of ground, and there is \$25,000 capital in the machinery and buildings; the value of the product is about \$75,000 yearly. In the packing there are 60 tons of straw used and 1,200 hogsheads.

MARBLE MANUFACTURERS.

There are eleven large manufactories of marbles, making mantles, monuments, and other articles for which marble is used. They are

Firm.	Office.	Estab'd.	By.
W. W. Wallace, . . .	319 Liberty st. . .	1832	W. W. Wallace.
W. C. Brown, . . .	48th and Butler sts.	1832	Chislett & Wilkins.
John Wilkins, Jr., .	295 Penn avenue. .	1848	John Wilkins.
Verner & Co. . . .	286 Penn avenue. .	1856	John McCargo.
John Metcalfe, . . .	45th and Butler sts.	1859	Evans & Metcalfe.
J. F. Evans,	45th and Butler sts.	1857	Jenkins & Evans.
Alex. Beggs,	63 Anderson st. . .	1860	Beggs & Lindsey.
P. C. Reniers, . . .	346 Liberty st. . .	1860	P. C. Reniers.
A. S. Harbaugh, . .	48th and Butler st. .	1860	A. J. Harbaugh.
H. Pichardt,	Penn avenue. . . .	1872	H. Pichardt.
Alex. Caskey,	32d st. and Penn av.	1871	Dodds & Caskey.

These eleven establishments employ 162 men, whose wages average \$103,000 a year, and the value of their product is \$290,000.

There is one firm manufacturing slate mantles, L. H. Smith & Co., 49 Sixth street. They employ 15 men, whose wages amount to \$11,760 yearly, and the value of the product is about \$40,000.

HYDRAULIC CEMENT MANUFACTURERS.

This business is prosecuted by Mills & Co., whose office is at No. 258 Liberty street, and was established in 1867 by the same firm. The principal quarry from whence the stone is taken, is at West Newton, where there is a face of the peculiar limestone from whence this is made, of 150 feet. A second quarry used by this firm, is at Mansfield, five miles from the city, where the stone has a face of 50 feet. The capital in the appliances for the business, which include three kilns and two run of stones, is \$25,000. The firm employ 22 hands, distribute \$10,000 wages, and produce 35,000 barrels annually of hydraulic cement.

The selling of the same article made by other than Pittsburgh factories, is done by one other firm, whose sales they state to be 60,000 barrels annually.

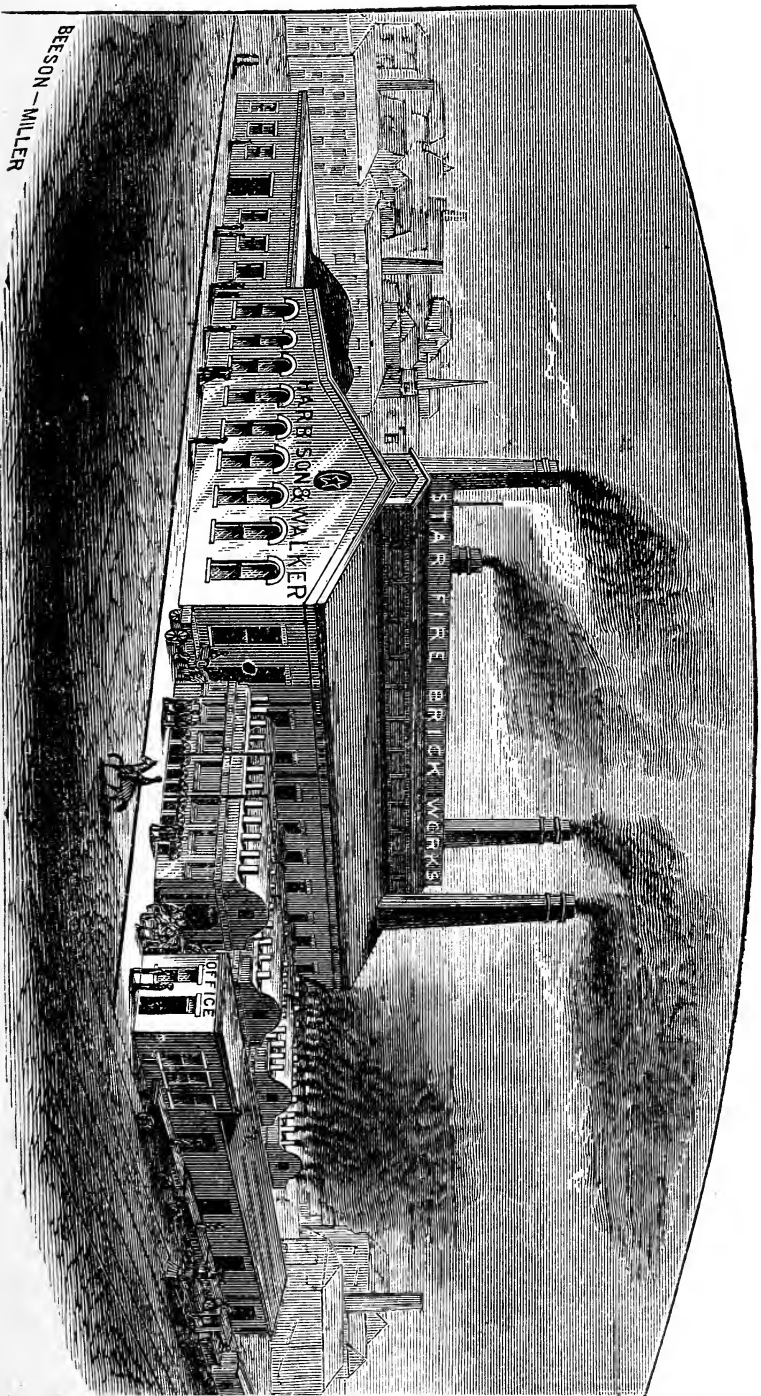
FIRE BRICK MANUFACTURERS.

The production of this article is made a special business of by eight firms. The statistics of this branch of manufactures are of course compact, being almost entirely those of labor and production of brick. In a manufacturing district like Pittsburgh, where great heats are applied to the crude substances used to produce many of the article manufactured, the article of fire brick is an important item in the consumptions of those factories. The firms are:

Style of Mill.	Firm.	Office	Establ'd.	By.	
	J. & J. M. Porter.	{ 3 Smithfield street.	—	—	4 kilns.
	Kier Bros.	{ 369 Liberty street.	1849	{ Glover, Kier & Jones.	
Bolivar.	{ Reese, Hammond & Co.	{ 371 Liberty street.	1857	{ ————	3 kilns.
Apollo.	{ Isaac Reese. . .	{ 371 Liberty street.	1864	{ Johnson, Taylor & Co.	4 kilns.
Star.	{ Harbison, Walker & Co.	22d street. .	1865	{ Star Fire Brick Co.	4 kilns.
Empire.	{ Reese, Lemon & Co.	{ 371 Liberty street.	1873	{ Reese, Lemon & Co.	3 kilns.
	Murtland & Scott.	Second av. .	1863	Jno. Nicholson. .	
	Gardner & Bro. .	96½ 4th av. .	1864	Nelson & Gardner.	
	Sutor & Brice. .	16 Sixth st.	1869	Sutor & Brice.	

These nine establishments employ 262 men, whose wages will amount in a year to about \$121,000, and the works will produce an average of eighteen million brick and tile, whose value would be about \$540,000.

The Star Fire Brick Co. have the largest works in the city, their whole process being carried on at Twenty-second and Railroad streets. The works of Messrs. Murtland & Scott are also in the city. The works of the other firms are in adjoining counties.



VIEW AT CORNER OF TWENTY-SECOND AND RAILROAD STREETS.

STAR FIRE BRICK WORKS.

BUILDING BRICK

Is likewise an important branch of manufacture of products of Pittsburgh. There are 25 firms engaged in this business, as follows ;

Style of Firm	Est'd.	Who-By.	Location. Pittsburgh.	Men.	Wages.
Wm. Moore.	1836	George Moore.	13th Ward.	15	5,850
Geo. H. Moore,	1869	A. A. Moore.	13th "	14	5,460
Geo. B. Moore.	1836	Geo. Moore & Bros.	13th "	15	5,850
Philip Wensel & Sons,	1874	P. Wensel & Sons,	13th "	15	5,850
Jno. H. Neely.	1872	Thos. Neely.	14th "	9	3,510
Munn & Greer.	1844	D. Hutchison.	6th "	30	11,700
Richard Knowlson,	1845	Al. Black.	6th "	12	4,680
Geo. Moffitt.	1863	Geo. Moffitt.	6th "	12	4,680
Robt. H. Mawhinney.	1860	Jas. Mawhinney.	6th "	9	3,510
Rob't Coward.	1853	Rob't Coward.	6th "	50	19,500
John Keefe.	1869	Thos. Keefe.	11th "	15	5,850
Jno. Knowlson & Son.	1873	Jno. Knowlson.	21st "	12	4,680
J. W. Beckett.	1865	Superior Press Co.	19th "	17	6,630
D. Blair & Bro.	1866	D. Blair.	19th "	22	8,580
S. McKinley & Bros.	1862	S. McKinley & Bros	16th "	35	13,650
Geo. R. Dickson,	1860	Pitts. St'm Brick Co.	Homestead.	50	19,500
			Allegheny City.		
John Huckestine.	1867	Jno. Huckestine.	37 Fairmont st.	41	15,990
John Huckestine.	1870	Z. Gillespie.	Preble avenue.	20	7,800
John Kerr.	1856	Wm. Dick,	78 Ackley st.	8	3,120
Jacob Miller.	1865	Jacob Miller.	Strawberry lane.	30	11,700
Miller & Co.	1866	J. Campbell.	" "	8	3,120
Jacob Frantz & Co.	1849	Jacob Frantz.	" "	25	9,750
Thos. Barclay,	1868	Porter & Dalzell,	6th Ward,	10	3,960
Henry Falkner.	1854	H. Falkner.	370 Beaver av.	25	9,750

The total number of men employed is 499, whose wages amount to \$184,610; they employ 140 horses, 82 wagons, consume 1,140,000 bushels of coal, and produce 54,500,000 brick annually. Worth at present rates of \$6.00 per thousand, \$327,000. The value of the improvements is \$147,000, and the area of ground occupied by these kilns is 106 acres.

GLASS SAND.

Is manufactured by one firm, SPEER, CLARK & Co., foot of Grant street, by the crushing of rock. The business was established in 1839, by Lewis M. Speer; there are 25 men employed, whose wages average \$13,000 a year; 21,000 tons of sand is produced, and the sales average \$75,000 a year. The capital in mill, etc. is \$51,000, and the space occupied about 8 acres.

SEWER PIPE AND TERRA COTTA WARE

Is largely sold, and manufactured to a considerable extent; several of the parties engaged in this do not, however, manufacture in the city. The establishments are

Firm.	Office.	Estab'd.	Who By.
N. U. Walker,	372 Penn street.	1842	N. U. Walker.
Akron Pipe Co.	358 " "	1848	Akron Pipe Co.
H. H. Collins,	133 Second avenue.	1860	Carlisle & Co.
W. T. Dunn & Co.	41 Federal street.	1862	R. B. & C. A. Brocket.
Mills & Co.	258 Liberty street.	1867	Mills & Co.
Wm. Hutchinson.	369 " "	1869	Wm. Hutchinson.

These six firms sell about \$226,000 of the pipe and terra cotta ware. There are five other firms dealing in the same description of goods from whom no statistics were obtained.

CHAPTER XX.

MANUFACTURES FROM ANIMAL AND AGRICULTURAL PRODUCTS.

TOBACCO.

The business of manufacturing tobacco and segars, and the wholesale dealing in the same, is an important branch of the business of the two cities. The greater bulk of the business is in segars, of which there are a large number of factories. There are in Pittsburgh 148 segar factories, employing 592 hands, and in Allegheny 102, employing 408 hands, making 250 manufactories of segars in the two cities, whose total employees number 1,000, and whose wages aggregate \$390,000. There were sold in 1875, by the Allegheny factories, 11,266,044 segars, and by the Pittsburgh factories, 18,201,650, being 29,467,699 in all. The value of these was \$589,940, as near as could be ascertained. The enumeration of these factories would fill larger space than can be spared in this volume.

There are, in addition, several firms, jobbers of imported and domestic segars, and also of tobaccos. These firms are:

Firm.	Location.	Estab'd.	By
Chas. C. Baer, . . .	108 Wood street, .	1863	McCallister & Baer.
Joseph M. Sickell, . .	40 Wood street, . .	1864	J. M. Sickell.
Henry Dalmeyer, . .	53 Liberty street, .	1852	Henry Dalmeyer.
Pretzfeld Bros. . . .	145 Liberty street, .	1866	Pretzfeld Bros.
Herzog & Bachman, .	240 Liberty street, .	1871	Wm. Herzog.
John Hays,	265 Liberty street, .	1846	John Hays.
Voigt & Davidson, . .	228 Liberty street, .	1873	Voigt & Davidson.
John Fullerton, . . .	279 Liberty street, .	1837	John Fullerton.
Weyman & Bró., . .	81 Smithfield street,	1823	Geo. Weyman.

These firms employ 48 hands, whose wages will average \$30,000, and their sales \$650,000.

There are four firms dealing in

LEAF TOBACCO.

Firm.	Location.	Estab'd.	By
Martin Heyle,	330 Liberty street,	1850	M. Heyle.
Pretzfeld & Bro. . . .	245 Liberty street,	1866	Pretzfeld & Bro.
Maul & Grote,	181 Liberty street,	1871	Maul & Grote.
S. W. Day,	100 Wood street,	1874	S. W. Day.

These four firms sell about \$250,000 of leaf tobacco.

There are two

MANUFACTURERS OF TOBACCO.

Firm.	Location.	Estab'd.	By
W. & D. Rinehart,	Cor. Water and Short sts.	1838	W. & D. Rinehart.
R. & W. Jenkinson,	287 Liberty street, . .	1861	R. & W. Jenkinson.

They employ 80 hands, whose wages average \$33,000 a year. The capital in machinery is about \$35,000, and their sales of manufactured tobacco about \$125,000.

From these figures it would appear that the tobacco business of Pittsburgh and Allegheny, in what may be called its wholesale and manufacturing branches, amounts to about \$1,909,000.

There are, in addition, a large amount of retail dealers, of whose business no statement is made.

BREWERIES.

There are in Pittsburgh and Allegheny nineteen breweries. Of these six brew ale, and thirteen lager beer. The six ale breweries are:

Style of Works.	Style of Firm.	Office.	Estab'd.	Who By.	Barrels Capacity
Pittsburgh.	{ Joshua Rhodes } & Co.	{ Duquesne way	1854	Rhodes & Verner.	700
Darlington's.	H. Darlington.	110 Federal st.	1867	H. Darlington.	350
Phoenix.	{ Spencer, } { McKay & Co }	{ 24th & Small- } man sts.	{ 1845	Wood & Hughes.	350
Winterton.	{ Z. Wain- } { wright & Co. }	{ 36th and Char- } lotta sts.	{ 1818	{ Joseph Wainright, } Jr.	{ 150
—	Young & Booth.	463 Rebecca.	1828	R. A. Irwin & Co.	150
Oregon.	{ Pier, Dan- } { nels & Co. }	{ Stevenson and } Forbes.	{ 1840	— —	100

These six ale breweries employ 207 hands, whose wages will average \$150,000 a year; 258,000 lbs. of hops, and 364,000 bush. of barley are used; the sales are \$750,000 a year, and the value of the buildings, machinery and ground is \$775,000; 24 wagons and 60 horses are employed in the transportations of the material and product.

There are also thirteen lager beer breweries, who employ 100 hands, whose wages will amount to \$61,000; they consume about 200,000 lbs. hops, and 250,000 bushels of barley. The value of their sales will average about \$360,000.

FLOUR MILLS

There are in Pittsburgh and Allegheny five mills manufacturing flour, viz:

Style of Works.	Style of Firm.	Office.	Estab'd.	Who By.
	Wm. Provost.	1921 Josephine.	—	—
	Gilmore & Co.	148 South Canal.	1826	— Voegtly.
Iron City.	Whitmyer & Co.	38th and Railroad.	1874	Whitmyer & Co.
	Marshall, Kennedy & Co.	15th and Liberty.	1850	Wilmarth & Noble
	J. Born.	Second & Middle.	—	—

These mills employ 80 hands, whose wages would amount to \$50,000; the value of the machinery, buildings, etc., is \$152,000; the space occupied by the mills is over one acre, and the value of the product about \$900,000.

CRACKER BAKERIES.

The manufacturing of crackers is one of the leading businesses in the sustenance division of the cities' occupations. There are four manufacturers:

Firm.	Office.	Estab'd.	By.
S. S. Marvin & Co. . .	91 Liberty street. .	1831	John Davis.
Snowden & Kemp, . .	29 Seventh. . . .	1842	Martin Connolly.
E. Maginn,	295 Liberty ave. .	1857	E. & C. Maginn.
Jas. McClurg & Co. . .	187 Rebecca street.	1871	Jas. McClurg & Co.

These four manufactories employ 135 hands, whose wages amount to \$61,000 a year. They use 26,000 barrels of flour a year; 1,700 barrels of sugar; 560 barrels molasses; 460,000 lbs. lard; 35,000 dozen eggs; 33,000 pounds fruit. Their sales average about \$500,000, and the value of the machinery, buildings and ground used in the works is about \$215,000.

TANNERIES.

Firm.	Office.	Estab'd.	By.
Kiefer, Stifel & Co. . .	River avenue. . .	1872	Kiefer, Stifel & Co.
A. Holstein,	River avenue. . .	1862	A. Holstein.
Frederick Dorlzel, . .	—	—	Iron City.
A. & J. Groetzinger, .	—	1851	C. Groetzinger & Son
Lappe & Hax,	Spring Garden av.	—	—
Jas. Callery & Co. . .	276 River avenue.	1800	Wm. Hays.
D. Beitler & Co. . . .	East street. . . .	1875	D. Beitler & Co.
Jno. Adams,	—	1865	Jno. Adams.
Jno. McElhany,	—	1867	Jno. McElhany.
— Henbangner, . . .	Ohio street. . . .	1865	— Henbangner.
Henry Barbarch, . . .	Pleasant Valley. .	1860	H. Barbarch.
Hartley Bros.	58 Smithfield st. .	1863	Hartley, McKee & Co.
G. Kann,	210 Liberty street.	1867	G. Kann.
Wm. Flaccus & Son, .	35th & Rail Road sts	1844	Wm. Flaccus.

These fourteen tanneries employ 166 hands, whose wages will amount to \$85,000 a year. They tan 70,000 hides, besides sheep and calf skins; and their product is worth about \$850,000; the space occupied by the tanneries is nearly 21 acres.

NEATS-FOOT OIL, GLUE, BONE DUST AND FERTILIZERS.

This business is carried on by one firm, W. A. Hoeveler & Co., whose office is at No. 25 Seventh street. They employ 50 men, whose wages will average \$25,000 a year. They produce from 5,000 to 7,000 pounds of glue a day in the season for manufacturing, 10 tons a day of bone dust, and fertilizers, and about 250 barrels neats-foot oil a year.

The establishment occupies some 16 acres, and the capital in machinery, ground and buildings, is \$50,000. The firm also manufacture curled hair of all grades. Of this latter article, there are two other factories, whose statistics could not be had.

SOAP MANUFACTURERS.

Firm.	Office.	Establ'd.	By.
B. C. & J. H. Sawyer .	47 Wood street. . .	—	—
W. & H. Walker. . .	Third and Middle sts	1837	W. & H. Walker.
Reed & Co.	253 Liberty street .	1868	Wm Reed.
Strunz & Wetzel. . .	816 Bingham street.	1854	S. Strunz.
Wilson & Gorman. . .	199 Fourth avenue.	1826	G. W. Jackson.
A. Wilson & Co. . .	45 Ross street. . .	1834	A. Gilmore.

These firms employ an average of 50 hands, whose wages will reach \$30,000. They will use rosin to amount of \$44,000; tallow, \$120,000, and \$8,000 of cocoa and palm oils. Their product will reach \$450,000. The space occupied by the factories is over seven acres, and the value of the buildings and machinery, \$200,000.

BROOM MANUFACTORIES.

Firm.	Office.	Establ'd.	By.
McElroy & Co.	80 Third avenue. .	1852	McElroy & Co.
Abdiel McClure & Co.	309 Liberty street. .	1873	H. R. McClelland.
Lang & Co.	331 Liberty street. .	1874	Lang & Co.
L. H. Smith.	65 Sandusky street. .	1873	L. H. Smith.

These four firms employ 133 hands, whose wages average \$39,000 a year. They consume 650 tons of broom corn annually, 850,000 broom handles, 18 tons of wire, 6 tons of twine, and produce about 70,000 dozen brooms, worth about \$200,000.

BRUSH MANUFACTORIES.

The manufacture of brushes is also among the industries of Pittsburgh. There are, beside some few small shops making a few dozens yearly, six factories, where the making of all descriptions of brushes is quite largely carried on, one of the establishments, Stewart, Bro. & Co., being the largest west of the Allegheny Mountains. The firms are:

Firm.	Office.	Establ'd.	By.
Stewart, Bro. & Co., } Late F. W. Stewart & Co. }	359 Liberty street. .	1851	D. Stewart.
James Loughridge. .	171 Smithfield st. .	1854	— Loughridge.
J. D. Thompson. . .	176 Wood street. . .	1857	J. D. Thompson.
Duncan & Dilks. . .	87 Wood street. . .	1875	Duncan & Dilks.
L. H. Smith.	65 Sandusky street.	1873	L. H. Smith.

These employ 50 hands, whose wages will average \$35,000 a year. They use about 40,000 pounds of bristle a year, and a large amount of tampico and other material. Their products will aggregate \$190,000 a year.

CHAPTER XXI.

MISCELLANEOUS MANUFACTURES.

ARCHITECTURAL IRON WORKS.

A manufactory of irons for architectural purposes is one of the special businesses of Pittsburgh. The firm of W. B. SCAIFE & SONS, 119 First avenue, make it their chief business to shape, prepare and frame iron for the building of rail road depots, rolling mills, and all descriptions of buildings used as manufactories. These works are yet another illustration of the increase of Pittsburgh industries, having grown from a small tin, sheet iron and copper working shop, established in 1802 by Jeffrey Scaife, the grand-father of the present proprietors. The works occupy 15,000 square feet on the ground floor, extending from First to Third avenues; the chief portions of the buildings being three stories in height. The machinery used, which is of a great variety, represents an investment of \$30,000; and the capital in ground, buildings and machinery alone is about \$150,000. The establishment gives employment to an average of 60 hands, to whom \$40,000 of wages are annually paid. The consumption of iron, which is steadily on the increase, has been in previous years from 800 to 1000 tons yearly. The firm are also manufacturers of "Scaife's patent dome head-range boilers." Of these a large amount are annually made, the consumption of iron for which is included in the tons previously given. This is the largest range boiler works in the United States; and it is a fact of interest that the greater proportion of their product goes to the Eastern cities, and also that these boilers are ordered from and exported to Germany.

JAPANNED AND PRESSED GOODS.

The manufacture of these goods was established in 1839 by JOHN DUNLAP, at the site, corner Second avenue and Market street, where he still pursues the business. This establishment presents a fair representation of the progress of Pittsburgh's manufactures. At the time of its establishment, its products were made entirely by hand tools, the word machinery not applying to the simple instruments used thirty years ago. The establishment has now six large drop presses and four pressing machines, worked by a twenty horse power engine. Some of the work produced has still to be done by hand, and in that 8 hand presses are employed. At the establishment of these works, one small warehouse of 20 by 80 feet, was too much for the business, which now requires 5 warehouses. Then three or four hands performed all the work; now an average

of 60 hands are employed. As illustrative of the proportional growth of Pittsburgh in all branches, the facts of the progress made in this firm, as well as in others, are stated.

The variety of articles made in this branch of Pittsburgh's manufactures is great. Toilet sets, fine coal hods, copper hods, copper tea kettles and tea canisters, and all descriptions of Japanned and press tin ware goods, in almost endless variety.

There are two establishments in the city in this branch of manufactures:

Firm.	Office.	Establ'd.	By.
John Dunlap. . . .	2d av. and Market st	1839	John Dunlap.
Fleming, Agnew & Co.	Market st. and 3d av	1857	John Fleming.

These two establishments employ 125 hands, whose wages will amount to \$60,000 yearly. They will consume 100,000 of tin plate yearly, beside block tin, sheet iron, lead, copper, to a large amount. They will use over 50 tons of straw yearly in packing, and produce from \$175,000 to \$200,000 of articles. The capital in machinery is about \$70,000.

ENAMELLED TIN AND HOLLOW WARE GOODS.

There are two extensive establishments of this description in operation in Pittsburgh, viz:

Firm.	Office.	Establ'd.	By.
Standard Manuf. Co. .	296 River avenue. .	1866	— Hartje.
Alborn, Clark & Co. .	96 Beech street. . .	1874	Wylie & Co.

These two factories occupy two acres of ground, and employ 115 hands, whose wages will amount to \$60,000. The capital in machinery, grounds and buildings, is estimated at \$160,000, and the products is about \$150,000 yearly. At present, one of the establishments, the "Standard," is the only one in the West that tins cast iron ware.

TAR CHEMICAL WORKS.

This manufactory, operated by H. A. Clifford & Co., is the only one in Pittsburgh. The products from tar are varied, as well as curious. From tar this establishment produces not only roofing and paving cements, light and heavy tar oil, but also all the beautiful analine colors and oil myrbune, used in the place of almond oil for flavoring soaps. The products of the works are about \$50,000 annually; and the labor of ten hands, whose wages amount to \$10,000 annually, is required. They use 12,000 barrels of tar, 50 drums caustic soda, 1,500 carboys of sulphuric acid, 50 tons nitric acid. The space occupied by the works is over one acre, and the capital in buildings and machinery about \$20,000. The works are at No. 170 Rebecca street, Allegheny.

GLASS MOULD MAKING.

The making of glass moulds is another industry of Pittsburgh. There are three works where this branch of manufacturing is prosecuted.

Firm.	Location.	Estab'd.	By
A. Thompson, . . .	90 Eighth street, S. S. .	—	A. Thompson.
Washington Beck, . .	60 Sixteenth street, S. S.	1857	W. Beck.
P. Smith & Co., . . .	129 First street, . . .	—	L. Knight.

There are employed in this business 35 hands, whose wages will average \$30,000 a year. The value of their products will amount to \$70,000 annually. The largest of these works is that of Washington Beck, in which 8 turning lathes, 2 planers, 3 shapers and three drill presses are used. This establishment is another exemplification of the growth of Pittsburgh workshops. When first started, nineteen years ago, the space occupied was 12 by 8 feet; the works now are 60 by 60 feet, three stories in height. This establishment is represented by its work in Japan, Canada, and chief cities of the United States.

POTS FOR GLASS FACTORIES.

There are two establishments in this city that manufacture pots for glass works exclusively.

Firm.	Location.	Estab'd.	By
Thos. Coffin & Co. . .	10th and Bradford sts.	1864	Thos. Coffin.
Boyle, McLaughlin & Co.	15th st., above Carson,	1875	Boyle, McLaughlin & Co.

These two works employ 73 hands, whose wages will average \$25,000 a year. They will consume about 475 tons German clay, 1,000 tons Missouri clay. The value of the products average \$80,000 a year; the value of the buildings and machinery is \$22,000, and they occupy nearly one acre of ground.

WOODEN WARE WORKS.

The making of wooden ware is carried on at Twenty-eighth and Railroad streets, by W. H. Berger, under the style of the PITTSBURGH WOODEN WARE WORKS. The factory was established in 1861 by White & Berger. It has 5 dry houses, holding 24,000 pails; one 56 inch circular saw and 2 lathes. The works employ 35 hands, whose wages amount to \$17,000 a year, and manufacture about 92,000 pails and 20,000 tubs, when running full; also 159,000 boxes for packing glass. At present the product of the factory is \$60,000 to \$70,000 annually.

GAS WORKS MANUFACTURE.

This is a special branch of manufacturing carried on by Smith & Goldthorpe. It was established in 1871, and is in prosecution of the production of a patented gas works, for the making of fixed gas for villages and rural residences. The enterprise is a new one, and not yet fully developed; but during 1875 there were turned out 150 works, giving employment to 30 men, and consuming 80 tons of

stove castings, 200 tons of pipe, 50 tons of boiler iron, \$4,500 of gas fittings. The steel works of Singer, Nimick & Co., of which an illustration is among those of this volume, is lighted by one of the gas works made at this establishment, and also the City Poor Farm.

AGRICULTURAL IRONS AND IMPLEMENTS.

This branch of business is carried on by A. J. NELLIS & Co., at the corner of Allegheny avenue and Rebecca street. It was established in 1870, employs 100 hands when running full, and occupies about two acres of space, with machinery and buildings worth \$17,000. There are in the works 3 hammers, 3 furnaces, 5 lathes, 2 punchers and 5 forge fires. The product of the works will average about \$130,000 a year. Several specialties are among the products of the work, being agricultural articles.

STAINED GLASS.

There are two factories in Pittsburgh for the manufacture of stained or colored glass for churches, public halls and dwellings. The quality is equal to any turned out in the East or West, and no point is better adapted for its cheap production. Glass and fuel, the bulk of the articles used in its production, are peculiarly Pittsburgh staples. The firms are:

Firm.	Office.	Estab'd.	By.
Wm. Nelson. . . .	23 Market street. .	1852	Wm. Nelson.
Carter Bros.	First and Carson sts	1862	J. G. Carter.

These two firms employ 31 hands, whose wages amount to \$20,000 a year. The space occupied by the two factories is 102x175 feet. Stained glass lights, 60 to 70 inches long, are made, and the product of the works is about \$80,000 yearly.

NICKLE, GOLD AND SILVER PLATING

Is carried on by Walter E. Hague, No. 136 Wood street, by whom the business was established in 1869. The details of the product are told in the title of the business. There are used in the works 2 turning lathes, 2 polishing machines, and 1 electro magnetic machine. The business employs 9 hands, whose wages amount to \$6,000 a year, and there is used 200 pounds of nickel, 1,000 ounces of silver and 30 ounces of gold, in the plating done in a year.

SOLID SILVER SPOON AND FORK WORKS.

An establishment of this description is carried on at No. 136 Wood street, by Isaac Garrison, who established the business in 1868. There are three hands employed in the works, and spoons and forks made to the value of \$10,000.

HARNESS AND SADDLERY MANUFACTURERS.

The making of saddles and harness is prosecuted in thirty-two shops in the two cities. The great majority of these are, however, small individual shops,

employing only from one to two or three hands, including the proprietor. The principal firms are:

Firm.	Office.	Estab'd.	By.
Phelps & McKee. . .	26 Wood street. .	1834	R. H. Hartley.
Loughrey & Frew. . .	142 Wood street. .	1830	McClurkan & Beatty.
D. Frey.	100 Liberty street.	1861	E. Frey.
G. W. Ache.	114 Liberty street.	1872	G. W. Ache.

These employ 71 hands, whose wages will amount to \$47,000 a year, and their product to \$250,000. The remainder of the manufacturers in this line employ in the aggregate 80 hands, whose wages will be \$56,000, and their product is of the value of \$250,000. The aggregate number of hands employed in the trade being 151, and their wages \$100,000, and the total product \$500,000.

LEATHER BELT MANUFACTURING.

There is but one establishment carrying on this branch of business, which was established in 1836 by R. H. Hartley, and is now pursued by his sons under the title of Hartley Bros., at No. 58 Smithfield street. They manufacture leather belts from one to forty inches wide, using for that purpose the product of their own tannery, having sixty vats. They produce from 200,000 to 300,000 feet per year, employing eight hands, whose average wages per year will be about \$5,600.

LOOKING GLASS AND PICTURE FRAME MANUFACTURERS.

There are five firms manufacturing looking glasses:

Firm.	Office.	Estab'd.	By.
J. J. Gillespie & Co. .	86 Wood street. .	1838	J. W. Gillespie.
James Loughridge. .	71 Smithfield st.	1854	Loughridge & Marshall.
Pickersgill, Lyon & Co	141 Wood street.	1850	Wm. Pickersgill, Jr.
Boyd S. & Co. . . .	66 Fifth avenue.	—	—
J. G. Young & Sons. .	141 Smithfield. .	1848	J. G. Young.

These five firms employ 80 hands, whose wages will amount to \$54,250, and their sales to \$275,000. One of these firms, J. J. GILLESPIE & Co., are importers and dealers in French plate glass. There is one firm exclusively engaged in the manufacturing of show cases, F. Pollard, No. 45 Ninth street, established in 1871. The factory employs seven hands, pays \$4,082 of wages, uses \$7,000 of metal frames, and produce \$23,000 of show cases.

PAPER BAG MANUFACTURING.

The making of paper sacks is largely carried on by one establishment. Of late years, the practice of using a strong, heavy paper bag for packing flour, has become the custom, as well as the same material for sacks for other substances, for which wood was formerly used. The making of these sacks is prosecuted by the "Elkhorn Mills," Godfrey & Clark, No. 270 Liberty avenue. The business was established in 1861 by E. B. Godfrey. These sacks are made by machinery,

being cut, folded into form and pasted, while passing through the machinery. The rapidity with which mile after mile of paper can be run through this machine, going in at one end sheet or roll paper, and coming out at the other sacks, is something that must be seen to be comprehended. A roll of paper a mile in length, was just seven and a half minutes in passing through the cutting and pasting process. This single roll of paper made 5,780 sacks; showing that if the machine was kept running at the same speed for one hour, it would make 46,240 sacks, or 462,400 per day of ten hours.

The machinery is said to have a capacity to cut 200,000 bags a day. Heretofore, mill owners and others have been compelled to go East for the sacks, but now it is a significant fact that almost the entire western custom is filled by Godfrey & Clark, of Pittsburgh. There are 30 hands employed in this establishment, and the wages are \$15,000 yearly.

PAPER BOX FACTORIES.

There are five firms who manufacture paper boxes of all descriptions for all the uses to which boxes made of paper can be put:

Firm.	Office.	Estab'd.	By.
D. C. Kneeland. . . .	369 Liberty street. .	1842	D. C. Kneeland.
Edwin Greaves. . . .	92 Third avenue. .	1856	Chas. Buckley.
Joseph Shaw. . . .	72 Wood street. .	1866	Buckley & Shaw.
Machett & Co. . . .	74 Third avenue. .	1868	Alex Machett.
A. Walker & Sons. . .	196 Liberty street. .	1870	A. Walker & Sons.

These firms employ 84 hands, whose wages will average \$20,975 a year. They use from 300 to 400 tons of straw board a year, and produce work to the value of \$75,000 a year. The value of the machinery in use is about \$22,000.

There is also one CIGAR BOX FACTORY carried on by D. J. Rex, employing seven hands, using 150,000 feet of lumber, and producing work to the value of \$10,000.

CHAPTER XXII.

MERCANTILE INTERESTS.

The term "Merchants of Pittsburgh," first occurs in Smollet's History, in a mention of the transaction of Major General Stanwix, at Fort Pitt, in the winter of 1759-60.

In 1803 the entire commerce and manufactures of Pittsburgh were summed up at \$350,000. Of this, \$93,000 was created by what was then termed the "Bartering trade," or, the exchanging of one article of merchandise for another.

In 1808 there were fifty store-keepers or merchants. In 1817 there were 109 stores of various kinds in the city; and in 1836 there were 250 stores.

There is no doubt that Pittsburgh has, in her devotion to manufactures, neglected her mercantile or commercial opportunities. What those appear to others, the following extract from the *Chicago Bureau* indicates.

The editor says: "Pittsburgh has always been, by its natural advantages and manufactories, a supply point for the West; which has also been the chief market for its production. We believe in a healthy competition as the life of progress and trade. Yet, when one visits these vast and varied factories; notes the natural union here of minerals and fuel; the ponderous combinations of machinery, skilled labor and capital; with the able and experienced brains at work in the management of the same, he is apt to think there can be little chance elsewhere for the same enterprises with much show of success. *It is certain that there is small probability of a discovery at any other point of similar combined advantages for manufactures.*

Were we located at Pittsburgh, however, we should counsel her citizens not to continue the error they are at present guilty of: namely—a neglect of commercial interests, while securing the supremacy in manufactures. The natural position of that city for trade is something wonderful to think of. Had it been properly improved, it would have given her to-day a population of half a million. As a depot for exchange and trans-shipment of the products that naturally come to her as a centre, she controls the Mississippi basin. There is no point along the frontier of the Atlantic States westward, that is so commanding as a trade mart, as that of Pittsburgh."

There can be no reason given, that mercantile enterprise and commercial activity cannot overcome, why a distance of twelve hours or three hundred miles from the sea coast, should act as an obstacle to a large wholesale dry goods, hardware, boot and shoe, or other commercial goods business being transacted. The extent to which it is now transacted, while showing a large increase in amount in the past decade, is by no means in accordance with the strength of the position occupied by the city.

Taking into consideration the fact, that in all particulars the Pittsburgh wholesale merchant stands upon equal footing with those of the eastern cities, in all the facilities for procuring his stock—buying from and acting as the agent of the same manufacturers—importing from the same European sources—paying never more than they for the articles in which he deals, and able from the less expense, to do an equally remunerative business on five per cent. less profit, one point upon which to found this belief is apparent.

All things in prices, terms, and other business considerations in purchasing being equal between the two points contrasted, it is at once obvious to the prudent buyer that the advantages already mentioned as belonging expressly to Pittsburgh, from the advantage of lessened expenses and some others also belonging to Pittsburgh over western cities seeking the same trade, is sufficient to decide which point is the best. There is probably no city in the Union with such advantages for a great commercial business, as Pittsburgh, and it needs only the push and enterprise displayed in other cities in these things to develop her equal results. Of late years this has been exerted in the commission business and wholesale grocery business especially, and as a consequence, the increase in those lines of business has been marked.

As a point for transactions in produce the same advantages present themselves as are prominent in her adaptability for commission business, and there is no room for doubt but that capital and exertion would soon render this one of the largest grain and produce markets in the country. The varied and extensive advantages for transportation already recited as possessed by Pittsburgh, gives the facility for reception, while the same channels present avenues for forwarding it to the seaboard either speedily or cheaply and more leisurely.

In the wholesale business of dry goods, hardware, boots and shoes, etc., the same remarks apply; and it is certain that when Pittsburgh's lines of communication by rail are opened with the South, as shown in her railway system, that under proper exertion and commercial enterprise, those branches of business will, as has been the case in the past ten years, continue to increase and grow.

WHOLESALE DRY GOODS.

There are a number of extensive firms in this line of business in the city. They will at all times duplicate the prices of the markets of New York and Philadelphia in their line of goods. The stocks they keep are extensive, well assorted and judiciously selected. They are at all times prepared to extend to solvent buyers as ample accommodation as the eastern houses. The expense of transacting business in Pittsburgh is trifling to what it is in the eastern cities; and the difference between the personal and business expenses of a dry goods firm in Pittsburgh and one in New York or Philadelphia, is of itself a very pretty profit. This simple fact is one to be considered by the prudent purchaser. The greater the expenses of transacting business and of living, the larger per cent. of profit is necessary to meet such expenses and realize the expected

per cent. upon the capital employed; and it is the customer of the jobber who pays these expenses. The Pittsburgh jobber has the same access to the manufacturing markets of the world as those of any other city, and is as competent to secure desirable goods at as low prices. With the thrifty merchant who knows the value of a dollar and the advantage in sales that a well and cheaply purchased stock of goods is, it is not a matter of where his goods are bought, as how they are purchased.

There are now in Pittsburgh the following strictly wholesale dry goods jobbing houses:

Firm.	Office.	Establ'd.	By.
D. Gregg & Co. . . .	141 Wood st. .	1856	D. Gregg.
Arbuthnot, Shannon & Co	238 Liberty st. .	1843	C. Arbuthnot.
McCandless, Jamison & Co	103 Wood st. .	1836	Gordon & Gregg.
*J. Horne & Co. . . .	77 Market st. .	1850	J. Horne & Co.
Haines & Sheibler. . .	94 Wood street.	1852	Hampton, Wilson & Co.
Isaac Taylor.	129 Wood st. .	1859	Gregg & Taylor.
Jas. A. McNally. . . .	60 Wood street.	1866	J. A. McNally & Co.
C. Yeager & Co. . . .	110 Market st. .	—	C. Yeager & Co.
*Bernd & Co.	Fifth avenue, .	—	—
*Porter, Donaldson & Co.	Liberty & 5th av.	1872	Porter, Donaldson & Co

These firms employ 144 hands, whose wages will amount to \$93,000. The sales will average during the past three years, \$4,400,000 annually, but were much more in the few years preceding the panic of 1873. The depression of trade affecting this branch of business here as elsewhere. In addition to this, there are 76 retail, and retail and wholesale houses, whose sales will average about \$7,000,000.

WHOLESALE HARDWARE.

There are a number of hardware firms here who always keep excellent and extensive stocks of general hardware and cutlery. They are prepared to meet customers at any time, upon as accommodating terms as any of the eastern houses; and they make it a standing offer to all who visit this market to duplicate eastern bills, without regard to freights. The wholesale hardware firms of Pittsburgh stand upon the same footing in the procuring of their stocks as the best eastern houses. In all cases the articles come from the same American manufactories, and are imported in the same way from Europe, and at the same cost. There is no reason why the merchant purchasing from the eastern jobber should not do so from the Pittsburgh jobber; and there is the advantage of freights, traveling expenses, time, &c., as a reason why he should purchase at Pittsburgh. There are no better selected stocks to be found in the East, than here; and as before stated, the Pittsburgh jobber is prepared and willing to extend as liberal terms to the solvent purchaser as can be had in any city of the

*Wholesale millinery.

seaboard. The same remarks made touching the expenses of transacting business in dry goods, applies equally to the hardware houses, and the position upon which the jobbing houses of Pittsburgh of all kinds stand, may be thus summed up. While in every advantage of procuring their stocks, style, assortment, profuseness, cheapness, &c., they stand equal with the jobbers of any eastern city, they have at all times in the smallness of their expenses, the advantages of five per cent. over the East; which per cent., as previously mentioned, they are willing to give the advantage of to their customers. There are the following firms in the city:

Firm.	Office.	Establ'd.	By.
Logan, Gregg & Co. .	52 Wood st. . .	1831	Logan & Kennedy.
Whitmore, Wolff, } Lane & Co. . . }	50 Wood st. . .	1836	Whitmore & Wolff.
Lane Bros.	173 Liberty st. .	1847	Whitmore & Co.
England & Bindley. .	52 Seventh av. .	1853	John England.
Fahnestock & Murray.	58 Wood st. . .	1829	Saml. Fahnestock.
J. W. Woodwell & Co.	35 Wood st. . .	—	J. W. Woodwell.
Lindsay, Steritt & Co.	247 Liberty st. .	1867	Lindsay, Sterett & Co.
P. H. Laufman & Bro.	82 Wood st. . .	—	P. H. Laufman.
Thos. Birney & Co. .	70 Wood st. . .	1872	Thos. Birney & Co.

These firms employ 78 hands, whose wages will average \$65,000, and their sales are about \$1,250,000.

There are also the following firms dealing in

SADDLERY HARDWARE.

Firm.	Office.	Establ'd	By.
J. Herdman & Son. .	105 Wood st. . .	1843	J. Herdman.
Thos. Hare & Bro. . .	135 Wood st. . .	1856	McWhinney, Hare & Co
M. McWhinney & Bro.	137 Wood st. . .	1866	McWhinney, Hare & Co
Lyle, Barchfield & } McCance. . . . }	107 Wood st. . .	1871	{ Lyle, Barchfield & McCance.

These firms deal in all goods that pertain to this branch of trade, and employ 30 hands, whose wages will amount to \$20,000 a year, and their sales to \$450,000.

WHOLESALE BOOTS AND SHOES.

In this business there are several large firms whose stocks are always well selected, and who purchase from the same manufacturers and at the same prices as eastern jobbers in this line. The fact that all their advertisements contain a standing offer to duplicate any eastern purchased bill, is evidence of how secure they feel of their ability to compete with the shoe dealers in the cities of the Atlantic coast. There are seven houses which do a wholesale business, viz:

Firm.	Office.	Establ'd.	By.
H. Childs & Co. . . .	133 Wood st. . . .	1817	John Albree.
Geo. Albree & Co. . . .	71 Wood st. . . .	1831	Geo. Albree.
Wm. E. Schmertz. . . .	43 Fifth av. . . .	1848	W. E. Schmertz.
Wm. Pickersgill, Jr., . .	149 Wood st. . . .	1859	Wm. Pickersgill, Jr.
J. H. Borland.	53 Wood st.	1860	J. H. Borland.
Gill Bros.	252 Liberty st. . . .	1863	John Gill, Sr.
D. Gregg, Son & Co. . .	159 Wood st.	1866	Dhim, Gregg & Co.

These seven firms employ 59 hands, whose wages will average \$45,000 a year, and the sales will amount to \$1,600,000 a year. One of the firms, Wm. E. Schmertz & Co., is largely engaged in the manufacture of boots and shoes, employing 200 hands in the branch of business separate from those in the wholesale department of the firm. The consumption of stock by these workmen is about \$140,000 a year.

WHOLESALE LEATHER DEALERS.

There are eight firms transacting a wholesale leather business, viz:

Firm.	Office.	Established.	By.
James Callery & Co. . .	102 Liberty street.	1800	Wm. Hays.
A. Steinmeyer,	139 Smithfield st. .	1839	A. Steinmeyer.
John G. Brant,	357 Liberty street.	1859	Hammit & Knox.
G. W. Hoffstott,	299 Liberty street.	1850	Wilkinson & Bell.
Wm. Mooney's Sons, . .	271 Liberty street.	1862	Wm. Mooney.
D. Chestnut & Co., . . .	315 Liberty street.	1867	D. Chestnut.
G. Kann,	210 Liberty street.	1867	G. Kann.
Wm. E. Junker,	8 Smithfield street.	1870	Junker, Dietrich & Co

These firms employ 28 hands, pay 18,000 wages, and make sales to amount of \$570,000.

WHOLESALE NOTIONS AND FANCY GOODS.

There are eight firms doing an exclusive wholesale business in this branch of trade, viz:

Firm.	Office.	Establ'd.	By.
J. D. Thompson & Co. . .	176 Wood st.	1857	J. D. Thompson & Co.
J. Mithellenger,	74 Wood st.	1866	J. Mithellenger.
James Cochrane,	65 Wood st.	1868	James Cochrane.
J. S. Johnston,	65 Wood st.	1868	Carson & Johnston.
J. H. Leitman,	73 Wood st.	1874	J. H. Leitman.
Morganstern & Co. . . .	42 Fifth ave.	—	—
Casey & Mitchell,	Wood st. and 3d av.	1845	Casey & Mitchell.
M. Herzog & Bro.,	63 Wood st.	—	—

These firms employ 30 hands, whose wages will amount to \$20,000, and their sales will average \$600,000.

WHOLESALE LIQUOR DEALERS.

There are 17 firms who make dealing in liquors by wholesale their exclusive business. They are:

Firm.	Location.	Estab'd.	By
Miller, Forse & Co.,	211 Liberty street,	1831	Wm. Miller.
James Littell,	237 Liberty street,	1833	Robert Bell.
Schmidt & Friday,	384 Penn avenue.	1836	Wm. Schmidt.
James Bryar,	127 Liberty street,	1836	John Anderson.
Casey & Fogarty,	339 Liberty street,	1847	R. Watson & Co.
Thos. R. Kerr,	327 Liberty street,	1852	Wm. Carr & Co.
S. McCrickart,	337 Liberty street,	1854	S. McCrickart.
M. McCullough, Jr., & Co.	355 Liberty street,	1848	M. McCullough, Jr.
Adler & Roedelheim, . . .	143 First avenue,	1861	Adler, Rosenberg & Co.
Ph. Hamburger,	96 Liberty street,	1868	Ph. Hamburger.
Millinger, Hersberger & Co.	132 Water street,	1868	M., H. & Co.
J. J. Speck & Co.	145 Water street,	1866	Dierker & Speck.
M. Munhall & Co.	17 Water street,	1870	M. Munhall & Co.
E. Wormser & Son,	151 First avenue,	1871	Wormser & Sons.
Getty & Co.	184 First avenue,	1872	Getty & Co.
James McDonald & Co. . .	345 Liberty street,	1875	James McDonald & Co.
J. C. Finch,	136 Water street,	1874	J. C. Finch.

These 17 firms employ 99 hands, whose wages will average \$90,000 a year, and their sales amount to \$1,925,000.

One of the above firms, J. J. Speck & Co., also manufacture, as a specialty, domestic cordials, in which they use 300 barrels of sugar, 11,000 bottles, and produce blackberry, cherry and raspberry brandies.

DISTILLERIES.

There are four firms carrying on an exclusive business of distilling whiskies, as follows:

Firm.	Location.	Estab'd.	By
A. Guckenheimer & Bro. . . .	93 First avenue. .	1833	Thos. Bell.
Joseph S. Finch & Co. . . .	189 First avenue,	1852	Thos. Moore.
Wm. H. Holmes,	117 Water street,	1857	W. H. Holmes.
Thos. Moore,	189 First avenue,	1870	Thos. Moore.

These four establishments employ 120 hands, whose wages amount to \$102,000 a year. They use about 600,000 bushels of grain a year, and produce about 50,000 barrels a year of whisky. The capital in machinery and buildings is about \$350,000, and the value of that product \$4,000,000. The capacity of the works is about 450 barrels a day. The largest of these works, the Westminster, has been lying idle for the past three years.

WHOLESALE DRUGGISTS.

The wholesale drug business of Pittsburgh is carried on by nine distinctive drug houses. They are

Firm.	Office.	Estab'd.	By.
Geo. A. Kelly,	21 Wood st. . . .	1829	B. A. Fahnestock.
Mackeown, Thompson & Co.	195 Liberty st. . .	1825	John Hanlon.
R. E. Sellers & Co. . . .	45 Wood st. . . .	1835	Shinn, Sellers & Wilson
B. L. Fahnestock & Co.	Wood street. . . .	1829	B. A. Fahnestock.
J. Henderson & Bro. . . .	266 Liberty st. . .	1841	W. Henderson.
Harris & Ewing,	341 Liberty st. . .	1867	Harris & Ewing.
W. T. Jones & Co. . . .	292 Liberty st. . .	—	—
W. H. Brill & Co. . . .	Lacock & Federal.	—	—
H. P. Schwartz.	113 Federal st. . .	—	—

These employ about 104 hands, whose wages will average about \$79,000 and the average sales per year aggregate \$1,260,000.

PROPRIETARY MEDICINES.

While many of the wholesale druggist establishments have special preparations of greater or less note, which are usually classed under the head of patent medicines, there are only four distinct establishments, whose business is solely that of preparing and sale of what is termed proprietary medicines, being special medicinal compounds to which the attention of the firm is solely given, without attention to other branches of drug business. To the growths of this division to the business of Pittsburgh and Allegheny are as illustrative of the growth of the city as that of other branches.

The oldest exclusive proprietary medicine firm among these houses is that of Fleming Bros., engaged solely in the preparation and sale of M'LANE'S CELEBRATED VERMIFUGE AND LIVER PILLS. These standard preparations were established in 1834 by the wholesale drug house of Holmes & Kidd, from which the firm of Fleming Bros. is the lineal successor. The present firm employ 30 hands, whose wages will amount to \$15,000. Their sales have grown from a few dozen boxes and vials of the preparations in 1835 to the amount of over one and a half millions of vials and boxes.

The oldest proprietary medicine is that of B. A. Fahnestock's Vermifuge, the preparation of which was established in 1827 by B. A. Fahnestock, and now prepared and sold by J. E. Schwartz & Co., which firm is the direct successors of the drug house of B. A. Fahnestock & Co. This firm employ 10 hands, whose wages amount to \$6,000.

Hostetter's Bitters are another standard medicinal compound, whose world-wide notoriety has familiarized the name of Pittsburgh in all quarters of the earth as the place of its production. These bitters are prepared by the firm of Hostetter & Smith, by whom they were established in 1853. The buildings used

in the various branches of their business occupy a space of 110x160, and there there are employed 150 hands, whose wages amount to \$100,000 yearly. The gross sales of the preparation have reached \$1,000,000 a year. The firm employ in their printing 15 steam presses, and use 17,000 reams of paper in the printing of their circulars. They issue nine million almanacs a year, in nine different languages.

California Herb Bitters is another distinctive proprietary medicine prepared by J. J. Speck & Co. This compound was established in 1868 by Dierker & Speck, and at present the firm use 35,000 bottles in putting up the preparation and some three tons of certain California herbs.

SEVEN SEALS OR GOLDEN WONDER

Is the rather melo-dramatic title of another special medicine, which has, in its rapid progress so far, earned its right to the latter half of its title. This proprietary medicine was established in 1869 by R. M. Kennedy, and is prepared by the present firm of Kennedy & Co., corner Second avenue and Wood street. The building used in the preparation of the medicine is four stories high, 120x30 feet, being equal to 480x120 feet. The original proprietor began the business with but forty-two dollars in capital, and the sales last year reached \$125,000; and 32 hands, whose wages are about \$11,000 a year, and 60,000 bottles are used.

There are quite a number of medical preparations put up by the various drug houses, but their statistics are embraced in those of the drug business. The amount of sales of these five proprietary medicines will aggregate \$1,250,000. The hands employed are 232, and the wages aggregate \$132,000.

WHOLESALE CLOTHING AND PIECE GOODS.

The manufacturing of clothing is very largely carried on by three firms, who do an exclusively wholesale trade. They are

Firm.	Office.	Estab'd.	By.
J. Klee & Co., . . .	80 Wood st.,	1850	Klee & Kaufman.
Kaufman & Oppenheimer,	233 Liberty st.,	1864	Klee, Kaufman & Co.
Bierman, Heidelberg & Co.,	220 Liberty st.,	—	—

These firms employ 450 hands, whose wages will amount to \$220,000 a year. The sales of the three firms will average about \$800,000.

HATS, CAPS AND FURS.

There are three firms who wholesale the above description of goods:

Firm.	Office.	Estab'd.	By.
McCord & Co. . . .	131 Wood st. . .	1798	Robt. Peebles.
R. H. Palmer (Limited)	153 Wood st. . .	1839	R. H. Palmer.
Fleming & Oglevee. .	139 Wood st. . .	1860	Wm Fleming.

They employ 27 hands, whose wages will average about \$16,000, and the sales will amount to \$250,000.

GLASS JOBBERS AND DEALERS.

This is a class of business distinct from the manufacturing houses. There are three firms who make jobbing in glass a distinctive business. They are:

Firm.	Office.	Estab'd.
Atlantic Glass Co.	136 First street.	1868
Gallinger & Co.	145 First avenue.	1867
Union Glass Co.	17 Market street.	1869

These three houses handle 1,296,000 chimneys, 504,000 fruit jars, about 10,000 packages of tumblers and table-ware in a year, beside window glass. Their entire sales are about \$300,000.

LAMP, GLASS-WARE AND CARBON OIL JOBBERS.

There are four firms whose exclusive business is dealing in the above goods. They are

Firm.	Office.	Estab'd.	By.
R. P. Wallace & Co.	39 Wood st.	1850	J. C. Kirkpatrick & Co.
J. P. Smith, Son & Co.	189 Liberty st.	1862	J. P. Smith & Co.
Cavitt & Pollock,	311 Liberty st.	1862	Wallace, Cavitt & Co.
F. G. Craighead,	300 Liberty st.	1874	F. G. Craighead.

These four firms employ 40 hands, whose wages will amount to \$40,000 a year, and their sales to \$350,000. In this, as in several other classes of business, there are a number of establishments who do a large retail business.

CHINA, GLASS AND QUEENSWARE.

There are six firms engaged in the importation and wholesaleing of the above kinds of articles. They employ 30 hands, whose wages will average \$18,000 a year, and their sales average \$300,000.

THE GROCERY TRADE.

The general tenor of the remarks upon the various branches of the mercantile business, is applicable to this division of the commerce of Pittsburgh. There is no advantage in purchasing East over buying here, and on articles in this line of business the freights create sufficient difference to give this city the preference. The upward movements going on in the other branches of the wholesale trade is also decidedly perceptible in this. This branch of our commerce was injured by the railroads bringing this city so near in time of travel to the East; but reaction has commenced, and we believe, from the same reasons given in the commencement of this chapter for a large increase in the general jobbing business, that the grocery trade of this city will also become yearly heavier and more important.

Groceries are so staple and without fashion, that the market where they are purchased is of no weight; it is the small percentages that decide the purchase. Our wholesale houses have all the advantages of the eastern houses, and the

buyer here makes the savings of freights. Upon this branch of trade the improvement of the Ohio river will work great benefits, in the opening of the river markets through cheap freights to western dealers. There are twenty-one firms doing a strictly

WHOLESALE GROCERY BUSINESS.

Firm.	Office.	Establ'd.	By.
Arbuckles & Co. . . .	244 Liberty st. .	1818	Malcolm Leech.
C. Atwell & Co. . . .	131 Second av.	1855	Atwell, Lee & Co.
Carter Bros. & Co. . .	259 Liberty st. .	1867	Carter Bros. & Co.
Wm. C. Cooper. . . .	115 Liberty st. .	1838	Cooper & Young.
Curry & Metzgar. . .	329 Liberty st. .	1872	Curry & Metzgar.
Dilworth Bros., . . .	243 Liberty st. .	1870	Dilworth Bros.
J. S. Dilworth & Co. .	130 Second av.	1864	J. S. Dilworth & Co.
P. Duff & Son. . . .	11th st & Penn av	—	P. Duff & Son.
S. Ewart & Co. . . .	289 Liberty st. .	1860	S. Ewart.
Haworth & Dewhurst. .	251 Liberty st. .	1868	Haworth & Dewhurst.
T. C. Jenkins	174 Wood st. .	1862	T. C. Jenkins.
Johnson, Eagye, Earl & Co.	120 Second av.	—	—
Allen, Kirkpatrick & Co.	271 Liberty st. .	1853	Kirkpatrick & Herron.
Knox & Orr. . . .	268 Liberty st. .	1865	Knox & Orr.
Means, Sweeney & Co. .	— Second av.	1840	Cosgrave, Wick & Co.
M. W. Rankin & Bro. .	10 Smithfield st.	1856	M. W. Rankin & Co.
Schoonmaker & Co. . .	52 Seventh av.	—	—
B. H. Voskamp & Co. .	243 Liberty st. .	1862	Seghmeyer & Voskamp
A. Wallace. . . .	6 Sixth av. . .	1846	Lambert & Shipton.
Watt, Lang & Co. . . .	337 Liberty st. .	1860	Shoemaker & Lang.
John Wilson & Son. . .	297 Liberty st. .	1849	Watt & Wilson.
Jesse H. Lippincott & Co.	231 Liberty st. .	—	—

These twenty-one firms employ 190 hands, whose wages will average \$130,000, and their sales amount to an average of \$10,250,000. Among other items they sell about 40,000 sacks of coffee, 12,000 hogsheads of molasses, 15,000 barrels of syrups, 40,000 barrels and 2,000 hogsheads of sugar, and 12,000 chests of tea.

PORK PACKERS AND DEALERS.

There are eight firms pursuing this branch of business:

Firm.	Office.	Estab'd.	By.
F. Sellers & Co. . . .	331 Penn av. . .	1842	F. Sellers.
J. P. Hanna,	161 Liberty st. .	1854	J. P. Hanna & Co.
E. H. Meyers & Co. . .	217 Liberty st. .	1857	Meyers & McDevitt.
Rea, Hill & Co. . . .	303 Liberty st. .	1873	Rea, Hill & Kerr.
Reese Owens & Co. . .	21 Seventh av. .	—	Reese Owens & Co.
Walker, Dunlevy & Bro.	23 Seventh av. .	—	Walker, Cooper & Co.
Wm. B. Hays & Co. . .	217 Liberty st. .	1850	Hussey & Hays.
J. L. Dunseath & Co. .	301 Liberty st. .	—	—

The value of this trade is about \$2,500,000, but complete statistics could not be obtained.

MANUFACTURING CONFECTIONARIES.

There are five firms engaged in this branch of business, and also in the wholesaling of foreign fruits and fancy groceries.

Firm.	Office.	Estab'd.	By.
Reymer Bros.	126 Wood st. . .	1853	Joshua Rhodes.
P. H. Hunker,	98 Wood st. . . .	1838	J. J. Hunker & Co.
Kramer & Vogelson, . .	179 Liberty st. . .	1867	Kramer & Bond.
Chas. Maginn,	183 Liberty st. . .	1875	Chas. Maginn.
C. L. Flacus,	262 Liberty st. . .	1873	Flacus & Newingham.

These five firms employ 49 hands, whose wages will amount to \$26,000; and their sales of all descriptions of goods will average \$460,000.

RAG AND PAPER STOCK DEALERS.

There are six firms in the city who make a distinctive business of purchasing, sorting and selling rags and paper stock. They are

Firm.	Office.	Estab'd.	By.
McCullough, Smith & Co.	Penn av. and 7th.	1838	H. McCullough & Co.
Joseph Benedict, . . .	48 Wylie av. . . .	1862	S. Goldsmith.
Jas. Harrison,	102 Second ave.	1861	McElroy & Harrison.
McElroy & Co.	80 Third ave. . . .	1850	McElroy & Co.
Jas. Peters,	Third avenue. . . .	1876	J. Peters.
Ed. Metzgar,	Third avenue. . . .	1876	Ed. Metzgar.

These employ 90 hands, whose wages amount to \$30,400 annually; and their business amounts to \$330,000 annually.

BOOKS AND STATIONERY.

There are ten firms that transact a legitimate book business, combining wholesaling and retailing. They are

Firm.	Office.	Estab'd.	By.
J. R. Weldin & Co., . .	101 Wood street. . .	1852	J. R. Weldin.
R. S. Davis,	Wood st. & 5th av.	—	R. S. Davis.
S. A. Clarke & Co., . .	115 Wood street. . .	1869	S. A. Clarke.
Jas. B. Dodge & Bro. . .	127 Fifth avenue. . .	—	Jas. B. Dodge.
Pitts. Book & News Co.	163 Wood street. . .	1851	W. A. Gildenfenney.
Joseph Horner,	129 Smithfield st. . .	—	—
J. L. Reed & Sons, . . .	102 Fourth avenue.	—	—
W. W. Watters,	198 Penn avenue. . .	—	—
U. P. Board of Publication.	55 Ninth street. . .	—	—
Meth. Board of Publicat'n.	132 Fifth avenue. . .	—	—

These ten firms employ 60 hands, whose wages will average about \$36,000 a year; and their sales amount to about \$860,000.

In addition to these there is one other firm, A. H. English & Co., 98 Fourth avenue, who are engaged in the publication of their own series of school books, whose sales and employees are not included in the foregoing figures of the book trade. In addition there are several wholly retail firms.

There are several firms engaged in the stationery business, exclusive of books, viz:

*Myers, Schoyer & Co., 145 Wood st. *S. Reed Johnston & Co., 178 Wood st.
*W. G. Johnston & Co., 59 Wood st. *Stevenson & Foster, 3d av. and Wood.

These four firms employ in the stationery business 20 hands, and their sales amount to \$200,000.

There is one firm who make a speciality of Printers' Materials, A. C. Bakewell & Co., 75 Wood street, the sales of which amount to \$150,000.

IRON COMMISSION HOUSES.

There are nine firms in the city whose direct business is the sale of pig metal on commission. The following table, quoted from the *Pittsburgh Commercial's* report for 1875, of the receipts of metal at Pittsburgh, shows the receipts of ore, pig metal, scrap and muck bar for three years. Also the total of those firms of iron for 1871-2:

	1873.	1874.	1875.
Pig metal, tons,	297,133	259,611	173,842
Ore, tons,	320,842	255,317	175,596
Scrap, muck, &c.,	12,209	20,990	61,166
Totals,	631,182	533,918	410,504
Total for 1872,			496,648
Total for 1871,			367,207

The make of pig metal at the Pittsburgh furnaces would be in addition to those figures. The subject of Pittsburgh as an iron centre is so fully presented in other chapters of this volume, that it would be but a repetition of facts and figures to further here make mention of the trade.

The firms engaged in the handling of pig metal on commission in Pittsburgh, are

Firm.	Office.	Establ'd-	By.
Caughey & Hailman.	113 Water st.	—	—
A. H. Childs.	135 Wood st.	—	—
Loomis & Collard.	81 Fourth av.	1845	R. C. Loomis.
John Moorhead.	Water & Market sts	1846	King & Moorhead.
P. D. Nichols.	67 Fourth av.	—	—
Nimick & Co.	96 Water st.	1814	Allen & Grant.
Josiah Reamer.	91 Wood st.	—	—
Wistar Rodman.	99 Water st.	—	—
J. W. Porter.	— Water st.	1856	J. W. Porter.

Of the amount of metal sold by these firms no complete statistics could be obtained, and in their absence the value of this trade is compulsorily omitted.

*In connection with job printing and binding, the statistics to which are not included.

CHAPTER XXIII.

THE PRODUCE BUSINESS.

The value of the produce business of the city of Pittsburgh has been for several years past steadily on the increase, but is not as yet what the position of the city should obtain. There is no better point for the holding of grain for the advantages of the eastern and foreign markets. The western rivers and railways afford admirable facilities for the concentration of grain or other produce at this point; while the three admirable routes for shipment, at short notice and in quick time, to the sea-board is shown in the chapter on the railway system of Pittsburgh. Grain can be held in storage at Pittsburgh within eighteen or twenty hours of three eastern cities, and thus be able to catch at once a rising market, on telegraphic advice, even when the advance is of a brief holding. Whereas, stored at Chicago, or any other of the western grain centres, the opportunity to benefit by a temporary advance would be lost, before in the longer transportation, the grain could reach the market. Grain held at Pittsburgh, from the admirable facilities to reach the three chief grain markets of the coast in a few hours time, places the cereals held in Pittsburgh almost on an equality in taking quick advantage of a sudden advance with those stored in the eastern warehouses. With the improvement of the Ohio river as contemplated, the cheapening of freights consequent upon that increased facility will build up at Pittsburgh a large produce trade based on this very facility of quick shipment to the eastern markets, and cause grain held for a rise to be largely handled and stored here, to wait an advance, instead of at more remote western points. Even with railroad shipping facilities alone, it is quite possible that, under the advantages of Pittsburgh as a grain depot, the produce trade of the city would have grown with a greater rapidity if it had not been that discrimination in freights has retarded progress, and deterred business ability, enterprise and capital from locating where such restrictions to the active competitions of trade exist. From whatever reasons such discrimination exists, or by what cause they are created, they have none the less "slowed" the advance of Pittsburgh's produce trade, whose increase under restrictions only shows the natural strength of the city as a produce centre. At the present time the produce trade may be divided into three classes. Those dealing in grain and hay; those handling flour, and those selling on commission, general produce of all kinds.

THE GRAIN AND HAY DEALERS

Are embraced in twenty-five firms, who do chiefly an elevator and car delivery business, selling to the retail and jobbing trade at Pittsburgh or shipping to eastern markets. These firms are:

Firm.	Office.	Establ'd.	By.
Robt. Dickey & Co. . . .	77 Water st. .	1832	Isaiah Dickey.
McBane & Anger. . . .	141 Water st. .	1853	A. & A. McBane.
Hitchcock, M'Creery & Co	349 Liberty st. .	1856	Huffman, M'Creery & Co
J. & W. Fairley, . . .	415 Liberty st. .	1856	J. & W. Fairley.
S. B. Floyd & Co. . . .	417 Liberty st. .	1859	S. B. Floyd & Co.
L. G. Graff & Co. . . .	347 Liberty st. .	1850	L. G. Graff.
Jas. Graham.	366 Liberty st. .	1862	Jas. Graham.
W. J. Meek.	73 Water st. .	1864	W. J. Meek.
P. Duff & Sons.	124 Seventh av.	1864	P. Duff & Sons.
Keil & Richart.	349 Liberty st. .	1865	Keil & Richart.
McHenry & Hood.	365 Liberty st. .	1866	S. L. McHenry.
Lang & McKallip. . . .	347 Liberty st. .	1866	Henderson & Lang.
M. Gisal.	380 Penn av. .	1867	Scott & Gisal.
M. F. Herron & Co. . . .	415 Liberty st. .	1867	Robb & Herron.
James Alexander. . . .	415 Liberty st. .	1872	Jas Alexander.
Houck, McCague & Co. .	325 Liberty st. .	1873	Houck, Jamison & Co.
W. G. Miller.	328 Liberty st. .	—	—
D. G. Stewart.	357 Liberty st. .	1872	D. G. Stewart.
H. J. McCracken & Bro.	28 Smithfield st.	—	H. J. McCracken & Bro.
Fairman & Henderson. .	Wood & Water sts	1873	Fairman & Henderson.
W. H. Nantker & Son. .	147 First av. .	1873	W. H. Nantker & Co.
C. Hottnng & Son. . . .	119 Water st. .	1874	C. Hottnng & Son.
John Rose.	415 Liberty st. .	—	—
J. A. Duff.	415 Liberty st. .	—	—
— Kerr.	First av near Wood	1870	Briggs & Kerr.

These houses handled in 1875 340,000 bushels of wheat, 261,000 bushels of corn, 57,000 bushels of rye, 32,000 bushels of barley, 730,000 bushels of oats, 10,000 tons of hay. In addition to this, there were 283,000 bushels of oats handled by other commission houses dealing in general produce; also 117,000 bushels of corn and 3,000 tons of hay.

The following table* shows the receipts by river and rail for the past five years of the five leading articles of produce. It will be noticed that there is a falling off in 1875 from 1874. How much of this is due to the economies of the hard times, how much to freight discriminations, or to other causes, is not here to be considered, nor are the facts that will satisfactorily explain to be arrived at.

*Compiled from the trade report of the *Pittsburgh Commercial* for 1875.

	1871.	1872.	1873.	1874.	1875.
	BUSH.	BUSH.	BUSH.	BUSH.	BUSH.
Wheat,	630,560	534,535	571,042	712,268	374,762
Corn,	540,928	619,562	435,228	537,564	352,039
Oats,	839,497	973,117	1,364,582	1,627,046	958,589
Rye,	169,618	134,597	162,645	139,347	76,691
Barley,	366,142	260,960	492,455	426,442	316,834
Hay,	—	—	—	—	16,000 tons.

FLOUR TRADE AND FIRMS.

There are six firms dealing in flour, and doing but little in grains. These firms are

Firm.	Office.	Estab'd.	By.
S. Lindsay, Jr. & Co.	157 Liberty st. . .	1831	S. Lindsay.
Dan'l. Wallace, . . .	853 Liberty st. . .	1852	Wallace & Gardiner.
Roberts & Steel, . . .	467 Liberty st. . .	1862	M. Steel & Son.
F. W. Jenkins & Bro., .	255 Liberty st. . .	1866	T. C. Jenkins & Bro.
T. C. Jenkins, . . .	174 Wood st. . .	1865	T. C. Jenkins & Bro.
F. H. Seghmeyer, . .	370 Penn ave. . .	1872	F. H. Seghmeyer.

There are several of the grocery houses who also handle some flour, and the amount of transactions of the above six houses, together with that sold by the grocery houses shows sales of 319,000 barrels.

According to the *Commercial*, whose totals in wheat, corn, oats, barley and rye we have quoted, the receipts of flour at Pittsburgh, exclusive of that made here, was:

1871	237,302 bbls.	1874	467,176 "
1872	313,382 "	1875	399,608 "
1873	346,605 "	—	—

GENERAL PRODUCE COMMISSION TRADE.

In the past ten years there has grown up in the city of Pittsburgh a class of business firms known as produce commission houses, whose locality is almost entirely on Liberty street, extending from Sixth to Eleventh street. In each of the varying seasons, spring, summer, autumn and winter, that section of the city is a curiosity to visit. A quarter of a mile of most interesting commercial locality. The products of the earth seem, in their season, to be gathered thereto. The golden orange and banana, and fragrant pine apple of the tropics, in their season. Deer and partridge, prairie fowl and wild duck, turkey and chicken in the fall and winter months; and the year round cranberries, apples, pears, sweet potatoes, peaches, dried fruits, eggs, beans, butter, onions, and, in fact, about all the edible products of the earth, from Canada to Florida, from Connecticut to Minnesota, crowd the pavements and fill the warehouses along that interesting quarter of a mile of trade. There are fourteen firms who make dealing in this class of produce their especial business, viz:

Firm.	Office.	Estab'd.	By.
Aiken, Wallace & Pollock	185 Liberty st. .	1870	Aiken, Wal'ce & Pollock
A. Bricker & Son. . .	199 Liberty st. .	1863	A. Bricker & Son.
H. M. Caldwell & Co. .	205 Liberty st. .	1872	Morrow & Caldwell.
Caskey, Beaty & Co. . .	167 Liberty st. .	1859	H. Riddle.
Ed. Fox & Co.	201 Liberty st. .	1872	Ed. Fox & Co.
Head, Carson & Co. . .	249 Liberty st. .	1859	Head & Metzgar.
J. A. Graff & Son. . .	223 Liberty st. .	1863	J. A. Graff.
Jas. H. Loh & Co. . . .	203 Liberty st. .	1870	Loh, Son & Co.
Geo. L. Peabody & Co. .	325 Liberty st. .	1875	Geo. L. Peabody & Co.
Henry Rea, Jr.	305 Liberty st. .	1862	Rea & Keil.
Voight, Mahood & Co. .	257 Liberty st. .	1860	L. H. Voight & Co.
Van Gorder & Shephard.	351 Liberty st. .	1857	F. Van Gorder.
John White, Jr., & Son. .	361 Liberty st. .	1857	White Bros.
Wibert & Wallace. . . .	187 Liberty st. .	1870	Wm. H. Graff.

The sales of these firms are entirely made on commission, and will amount as near as can be ascertained to nearly \$3,000,000. Among other articles they disposed of in 1875 was 110,000 barrels of apples, 213,550 boxes of peaches, 1,455 car loads of potatoes, 38,000 barrels of cranberries, \$44,000 worth fresh strawberries, 18,000 barrels of onions, 16,000 barrels of sweet potatoes, 1,747,500 dozen of eggs, 1,595,000 pounds of butter, 111,000 gallons of apple butter, 9,000 barrels of beans, 200,000 pounds of poultry, 10,000 bushels of timothy and 6,000 bushels of clover seed, 283,000 bushels of oats and 3,000 tons of hay. These few articles are enumerated more to give an idea of the peculiar kind of produce business transacted by this class of houses, than to present a moiety of the varied and sometimes almost inconceivable articles of the garden, the orchard, the forest, the stream or the field, which they handle. They employ about 80 hands and pay \$50,000 of wages annually.

DEALERS IN LIVE STOCK.

The facilities of the Pittsburgh railway system have in the past few years created a very heavy business at Pittsburgh in live stock. There are thirteen firms now engaged exclusively in this business, whose places of business are all located at the stock yards of the Pennsylvania Railroad, in the 21st Ward (East Liberty). The following table shows these firms, the date of their establishment, and the stock they handle.

These firms employ 64 hands whose wages amount to \$64,660, and the amount of their sales, as shown by their books, is \$33,980,000.; several of these firms transacting a business from two to five millions of dollars each. The transportation of this stock requires about 700 cars per week, the usual loading being 18 cattle, 175 sheep, and 100 hogs to a car, and it would require 112 miles of cars to load the live stock sold at Pittsburgh. About two-thirds of this stock

is sold to the New York market, and the balance disposed of at Pittsburgh, Philadelphia and other points.

Style of Firm.	Established By.	Date.	Cattle.	Sheep.	Hogs.
Holmes, Lafferty, } Glass & Co. }	Holmes, Lafferty, } Glass & Co. }	1864	42,000	120,000	216,000
J. F. Sadler & Co. . .	Sadler & Havens, . .	1871	21,600	84,000	54,000
Hamilton, Loughry & Co	Hamilton, Loughry & Co	1874	30,000	144,000	96,000
Briggs, Docks & Dunn.	Smith, Watson & Briggs	1870	30,000	144,000	96,000
Voetter & Brainard, .	Julius Voetter, . . .	1863	—	—	150,000
Donley, McNabb & Co.	Smith & Donley, . .	1874	21,600	96,000	72,000
Cochran, Hesket & Co.	Cochran, Hesket & Co.	1875	3,000	36,000	60,000
H. G. Imhoff & Co. .	H. G. Imhoff & Co. .	1866	—	—	85,000
M. H. Gillett & Co. .	Messenger, Gillett & Co.	1864	—	—	92,543
S. B. Hedges & Co. .	Hedges & Taylor, . .	1868	28,800	96,000	144,000
Allerton & Wilson, .	Faber & Allerton, . .	1873	—	—	125,000
Halstead & Co. . . .	E. W. Faber,	1874	—	—	50,000
Aull & Varner, . . .	Aull & Varner, . . .	1875	10,000	—	—

There is also a large rendering establishment connected with this business, carried on by E. Hoover & Co., established in 1866, whose product is \$75,000 yearly, employing 6 hands.

CHAPTER XXIV.

FINANCIAL INSTITUTIONS.

The first bank opened for the transaction of business in Pittsburgh was in 1804, being a branch of the Bank of Pennsylvania. It began business on the first of January, in a stone building on the east side of Second avenue, between Market and Ferry streets. The building was destroyed by the great fire of 1845. The second bank, and perhaps justly to be styled the first bank at Pittsburgh, as it was organized here and its capital supplied by Pittsburgh merchants, was the Pittsburgh Manufacturing Company, which began business in 1810. It had no charter at that time, but in 1814 was merged into the present Bank of Pittsburgh, which was the first regularly chartered and organized bank in Pittsburgh. As such, a brief sketch of its early progress is in harmony with the treatment pursued, as far as data permitted, with all the other divisions of the city's business.

THE BANK OF PITTSBURGH was chartered in 1813-14, and organized for business on November 22, 1814, with the following board of directors: Wm. Wilkins, George Anshutz, Jr., Thomas Cromwell, Nicholas Cunningham, John Darragh, William Hays, Wm. M'Candless, James Morrison, John M. Snowden, Craig Ritchie, George Allison, James Brown and J. P. Skelton. On the 28th of November, 1814, Wm. Wilkins was chosen president, and Alexander Johnstone, Jr. cashier of the bank. The capital of the bank was nominally at this time \$600,000; of this only \$250,000 had been paid up to 1833, which in 1834 was increased to \$1,200,000. Mr. Wilkins was succeeded in the presidency by John Darragh, who was followed by John McDonald, and he by Wm. H. Denny, who, in April, 1835, was succeeded by John Graham. In 1866 Mr. Graham was succeeded in the presidency by John Harper, who entered the bank in 1832 as chief clerk, which position he retained until 1850, when he became assistant cashier; and on John Snyder's resignation in 1857, cashier, and on the retiring of Mr. Graham in 1866, president, as above stated. This office he still fills, after forty-four years of continuous service in the same institution, nearly three-fourths of the bank's existence, having filled all the official grades from clerk to president, being to-day the oldest bank officer in continuous service in the city. The leading policy of the Bank of Pittsburgh has been to consider its liabilities at all times, payable in specie, and to adhere to the avowed object of the "Pittsburgh Manufacturing Company," from whence it proceeded, to foster the manufacturing interest of Pittsburgh. It is claimed that in no instance has the bank coerced a loan in a time of financial difficulty.

The general impression prevails that the Bank of Pittsburgh never suspended specie payment. This is not precisely the fact. In 1837 they suspended at the general request of citizens, expressed at a large public meeting, but the suspension was only brief, as after a few days specie was paid in special cases to small amounts, and the bank soon resumed full specie payment. In the general suspensions of 1839 the bank continued to pay specie on all its liabilities, and in the suspension of 1841, by the banks of the whole country south and west of New York, the bank continued as before to pay in specie. In the great crisis of 1857 the Bank of Pittsburgh still continued its policy of paying coin for its liabilities, and in 1861 the bank again resolved to pay specie on its every liability, and in carrying out that resolve paid, from December 30, 1861, to December 1, 1866, *in gold* \$1,374,938.99.

The bank declared its first dividend of four per cent. the first Tuesday of May, 1815, having paid six dividends previously as the "Pittsburgh Manufacturing Co.," and has paid regular dividends on the first days of May and November ever since, being one hundred and twenty-two dividends which have averaged eight 44-100 per cent. In the coming November of 1876, the bank will have attained an age of sixty-three years, having passed through the depressions of three wars, and five suspensions of specie payments by the banks of the country without ever faltering in its original policy.

The third bank organized in the city was "THE MERCHANTS AND MANUFACTURERS BANK." This bank was organized in the old Exchange Hotel, in 1833, when Michael Tiernan was elected its first president, who was succeeded on April 1st, 1845 by Thomas Scott, who, in 1857, was followed by H. L. Bollman, and he was succeeded by Robert H. Hartley, on whose death, October 23, 1875, Wm. Rea, who had been a director for sixteen years, was chosen president.

THE EXCHANGE BANK OF PITTSBURGH was the next organized bank, it having been chartered in 1836, when Wm. Robinson was elected its first president. He served until 1851, when he was succeeded by Thos. M. Howe in 1852, who had previously been the cashier of the bank from 1839, having succeeded Mr. Forster, the first cashier. Mr. Howe, on his retiring from the presidency, continued as director up to the present time, being thirty-seven years continuous connection with the bank in an official capacity. Mr. Howe was succeeded in the presidency by James B. Murray who had succeeded Mr. Howe in the cashiership. John H. Shoenberger, the present president, succeeding Mr. J. B. Murray, and Andrew Long, the present cashier, succeeding H. M. Murray, who was cashier after J. B. Murray.

In 1833 there was chartered the Pittsburgh Saving Fund Company, which was in 1843 re-chartered as the Farmers Deposit Bank of Pittsburgh, under which title it continued until it became a national bank, under the same title with the addition of the word National. The dividends of this bank from its organization until 1855 averaged from 10 to 12 per cent., and in 1856 a dividend of 26 per cent. was paid. It is a singular fact, interesting to state in this brief

sketch of the earlier banks of the city, that from 1833 to 1857, the loss of this bank in its whole amount of discounts was not one hundred dollars.

In 1853 the CITIZENS DEPOSIT COMPANY was organized as a chartered company, with a capital of \$200,000. Oliver Blackburn being chosen the first president and E. D. Jones cashier. In 1857 the name was changed by act of Legislature to the CITIZENS BANK and privilege given to issue notes. In 1864 the bank became a national bank, Francis Sellers being its first president, and succeeded by Geo. A. Berry, the present president, in 1865.

In July, 1852, the PITTSBURGH TRUST COMPANY was chartered and organized simply as a bank of discount and deposit, with a paid up capital of \$200,000, which was increased to \$1,200,000. On the organization of the company, James Laughlin was chosen president, which position he still fills, being next to John Harper, of the Bank of Pittsburgh, the oldest bank president in continuous service in the city. John D. Scully was at the same time elected cashier, which office he still fills, and is the oldest bank cashier in continuous service in the city. In 1863 the company was chartered as a national bank, without change of officers.

In 1855 the Mechanics Bank was organized with a capital of \$500,000, being the sixth bank established in Pittsburgh. Rueben Miller, Jr., was chosen its first president, and Geo. D. McGrew its first cashier. Mr. Miller was succeeded in 1858, in the presidency, by Wm. B. Holmes, the present president, who has been eighteen years in office.

Such is the brief exhibit of the organization of the earlier banks of the city. In 1857 there were but six chartered banks of discount, issue and deposit, and the entire banking capital did not reach quite \$4,000,000. In 1876 there are 72 banks of all classes, as will be seen from the tables which follow.

These banks may be divided into four classes: The national banks, of which there are 28; the State banks, of which there are 12; the individual liability banks, of which there are 8; and the savings banks, of which there are 24.

This latter class are next in number to the national banks, and are themselves properly to be sub-divided into two classes: *First*. Those loaning on mortgages alone; and *Second*, Those loaning their funds on all satisfactory securities. The growth of savings banks is one that tells much for the prosperity of the mechanical population of the city. Until 1855 there was no savings bank in Pittsburgh,—at which date was organized the

DOLLAR SAVINGS BANK.

As the first institution of this class, it is proper that a brief sketch of its origin should have a place in these pages. This bank, which is now by far the largest financial institution of the city, was originated in June, 1854, by Chas. A. Colton, the present treasurer of the bank, which position he has held from its organization. The project was received with little favor at first, and it was only through Mr. Colton's energy and persistence that the institution was chartered and organized. The following extract from a communication written by Mr. Colton, tells graphically the story of its early days:

"We organized June, 1855; elected a president; he declined—had no faith. I told him that if I lived ten years I would have more deposits than the capital of the Bank of Pittsburgh, at which he laughed heartily. Tried three others before we found one that would accept. Opened for business July 19th, 1855, and with an advertisement in nine daily papers and thirty-nine good names as trustees, and my youngest son with two dollars to start the bank. The first and second day we took about \$50 in deposits from the trustees—made to please me. They had no faith, and some of them would call daily to see how I got along, saying, 'Where is your bank?' Looking at the few dollars on the counter, they would ask: 'Is that your bank? You must be crazy; you had better shut up and go to work on the railroad,' &c. I must confess that it went very hard, much worse than I had expected; not a person called sometimes for a whole day, and no receipts for two days. Two months had passed before I had any thing to invest or the first cent was placed to interest account; many persons would call two or three times to talk about per cent. and security before risking three or four dollars. One of our most sanguine trustees thought if I succeeded in getting \$25,000 the first year I would get a long. I speak of myself only in the getting up this bank for this reason, that what others did was without any real interest in the thing, but done only to please me; and in getting a quorum of six out of thirty-nine at monthly meetings of the board I had to talk to these members for two or three days beforehand as I met them, and then have to send my son around before there could be any business done; and for the first year or more, the Investing Committee did not meet at all, or very seldom—but the investments were made by one person, who had little faith, but did it to please me, and at the end of the month I would make out the statement of investments, and he would get them all five to sign, many of whom never came to the bank except, perhaps, once or twice to the monthly meetings, as the books will show. In starting without any capital, we had necessarily to run in debt for books, fitting up room, &c., and Judge Hepburn asked 'What security have I that my man will get his money back if I send him here to deposit \$5?' I said that if the thing did not succeed in three months, I supposed the trustees would contribute \$10 each, which would raise \$390, and close it up and pay back the money to the depositors. He moved that the trustees give a bond for \$100 each, which Mr. Umbstaetter drew up, and which only twenty-three signed. At this time I told the Judge it was bound to succeed, and for three years and eight months I did all the work myself, many a time taking the assets in my pocket to step out for a moment; but the latter part of this time it was very tedious, a thing that I would not do again for any amount of money. I was seldom out door from nine to three. I would have to wait on deposits at the counter and talk to those who wanted to borrow on mortgage at the end of it, alternately; and in the general suspension in September, 1857, the cash on hand was only about \$1,500, yet we had assets enough to pay all in full. And now I would say that this is the only Provident Saving Institution in the world, so far as I know, that has paid six per cent. from the start."

Mr. Colton's narrative tells the whole story of the origination and founding of this institution. In contrast with this the present statement of the bank is vivid. There are now 10,387 depositors who have in the bank \$4,691,620.34. This statement of deposits tells its own story of not only the success of the institution, but also of the great good it must have wrought in creating a system of saving in the community. Geo. Albree was the president of the bank from its start until September 10, 1869, when on retiring from personal reasons, James

Herdman was selected to succeed him, and is the present president, Chas. A. Colton having continued the treasurer from the beginning; and the present secretary, J. B. D. Meeds, having been in office from January 16, 1865. The money of the depositors is invested in first mortgages, and the bank had on the 1st of June, 1876, \$3,112,284.93 so invested.

The Pittsburgh Bank for Savings was the second of the institutions established. It was originally incorporated as the "Dime Savings Institution," in 1862. Its first president was James Park, jr., and D. McKinley its first treasurer. The present president is Geo. A. Berry, who succeeded James Park in 1865; and Chas. G. Milnor is the present treasurer, having succeeded Mr. McKinley on his resignation in May, 1876. The same year the Real Estate Savings Bank was chartered, Isaac Jones being its first president, and still continuing in that office.

There is in Pittsburgh one SAFE DEPOSIT Co., organized for the safe keeping of papers, bonds or other valuables. It was chartered in January, 1867, with a capital of \$250,000, and opened September 1st, 1869, Wm. Phillips being the first president, who, on his death, was succeeded by Henry Lloyd, the present president. The first secretary and treasurer was S. F. Von Bonnhorst, who was succeeded by William Little in 1874. The company, by their charter, are permitted, besides providing for the safe keeping of valuables, to act as trustees of estates, guardians of orphans, transfer and interest agents of bonds and stocks, and fill other fiduciary capacities of a like nature.

There are but five PRIVATE BANKING HOUSES. They transact all such business as usually pertains to such financial business; receiving deposits subject to check or on time certificates, buying and selling stocks, investing funds, making collections in other cities, and transacting all other details of a general banking business. The firms are:

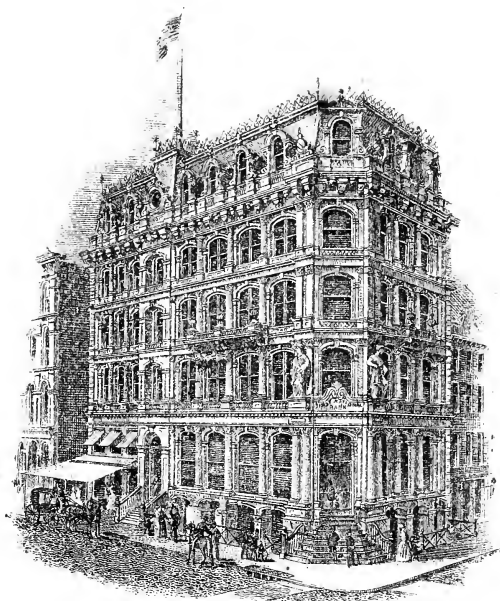
N. Holmes & Sons. . .	57 Market street, . .	1826	N. Holmes.
R. Patrick & Co. . .	52 Fifth avenue, . .	1850	Patrick & Friend.
Robinson & Bros. . .	78 Fourth avenue, . .	1864	Robinson Bros.
Semple & Jones, . .	80 Fourth avenue, . .	1859	Semple & Jones.
T. Mellon & Son, . .	116 Smithfield street,	1870	T. Mellon & Son.

The following tables exhibit the classification of the National, State, and Individual Banks, with their capital and other details of their financial standing.

TABLE NO. 1 OF NATIONAL BANKS, SHOWING:

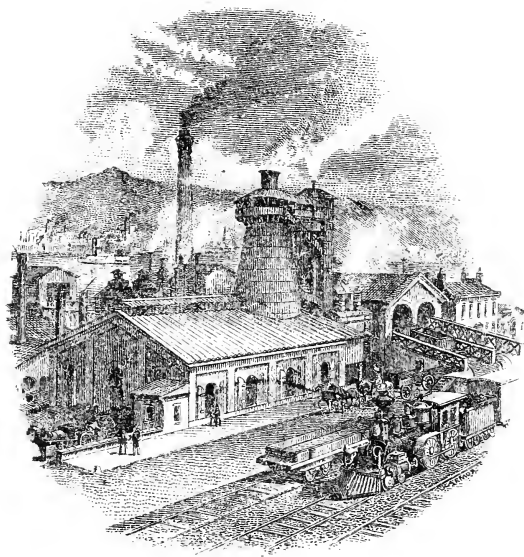
Name.	Date of Organization.	First President.	Present President.	Years in Office.	First Cashier.	Present Cashier.	Years in Office.
Allegheny, . . .	1857||	Hopewell Hepburn,	J. W. Cook, . . .	10	J. W. Cook, . . .	W. McCandless. . .	6
Citizens, . . .	1864	Francis Sellers. . .	Geo. A. Berry. . .	11	J. E. Brady, . . .	R. K. Wilson. . .	6
City, . . .	1868	Domeneck Ihmsen.	Domeneck Ihmsen.	8	J. W. Gormly, . . .	J. W. Taylor. . .	5
Diamond, . . .	1870*	James M. Cooper. . .	A. Garrison. . .	4	W. S. Scully, . . .	W. S. Scully. . .	6
Duquesne, . . .	1875†	A. J. Baker. . .	W. G. Johnston. . .	6	E. J. Roberts, . . .	A. H. Patterson. . .	6
Exchange, . . .	1836||	Wm. Robinson. . .	John H. Shoenberger.	5	John Forster, . . .	Andrew Long. . .	5
Farmers Deposit,	1833||	James Marshall. . .	Wm. Walker. . .	7	R. A. George, . . .	S. A. George. . .	5
Fifth, . . .	1875	Robt. Arthurs. . .	Robt. Arthurs. . .	1	L. Halsey Williams,	L. Halsey Williams. . .	1
First, . . .	1852‡	James Laughlin. . .	James Laughlin. . .	24	{ John D. Scully, . . .	John D. Scully. . .	24
First of Allegh'y	1864	T. H. Nevin. . .	T. H. Nevin. . .	12	{ Chas. E. Speer, ass't	Chas. E. Speer, ass't. . .	22
First of Birm'ham,	2				{ J. P. Kramer, . . .	J. P. Kramer, . . .	12
Fourth, . . .	1864	James O'Connor. . .	Thos. Donnelly. . .	10	S. D. Herron. . .	S. D. Herron. . .	8
German of Pitts.	1865**	A. Hoeveller. . .	A. Groetzinger. . .	8	Geo. A. Endly, . . .	Joseph Laurents, . . .	6
German of Alleg'y,	1868†	A. Wiese. . .	A. Wiese. . .	6	Chas. Seibert. . .	Jas. Stratman, . . .	—
Iron City, . . .	1857||	Jas. McAuley. . .	Rich'd Hays. . .	8	John Magoffin. . .	Geo. R. Duncan. . .	6
Marine, . . .	1875‡	Wm. H. Everson. . .	Wm. H. Everson. . .	1	W. C. Macrum. . .	W. C. Macrum. . .	1
Mechanics, . . .	1855||	Reuben Miller, Jr. . .	Wm. B. Holmes. . .	18	Geo. D. McGrew. . .	Wm. R. Thompson. . .	1
Merch. & Manuf.	1833||	Michael Tiernan. . .	Wm. Rea. . .	1	James Corry. . .	W. A. Shaw. . .	2
Metropolitan, . .	1875	C. A. Dravo. . .	C. A. Dravo. . .	1	W. H. Smith. . .	W. H. Smith. . .	1
Peoples, . . .	1865	Sam'l Rea. . .	B. Preston. . .	1	F. M. Gordon. . .	F. M. Gordon. . .	11
Pitts. of Commerce,	1865	Alfred Patterson. . .	Alfred Patterson. . .	11	Joseph H. Hill. . .	Joseph H. Hill. . .	11
Second of Alleg'y,	1865	John Brown, Jr. . .	Jas. Lockhart. . .	—	J. N. Davidson. . .	J. N. Davidson. . .	11
Second, . . .	1864††	G. E. Warner. . .	Geo. S. Head. . .	5	Robert E. Schmertz. . .	Jas. H. Willock. . .	4
Smithfield, . . .	1875††	Wm. B. Hays. . .	E. P. Jones. . .	4	W. W. Scott. . .	W. W. Scott. . .	5
Third, . . .	1864	Adam Reineman. . .	Wm. E. Schaeertz. . .	11	Robert C. Schmertz. . .	Wm. Steinmeyer. . .	5
Third of Alleg'y,	1875	J. Gallagher. . .	J. Gallagher. . .	1	W. A. Clemens. . .	H. H. Spangler. . .	—
Tradesmen's, . .	1865	A. Bradley. . .	A. Bradley. . .	11	Geo. T. Van Doren. . .	Cyrus Clarke, Jr. . .	8
Union, . . .	1865||	Jno. R. McCune. . .	John R. McCune. . .	11	R. S. Smith. . .	R. S. Smith. . .	11

*As the Diamond Savings Bank. †As National Bank in 1865. ‡As National Bank in 1863, originally Pittsburgh Trust Co. §Information refused.
 **Originally organized as German Trust and Savings Bank in 1869. ††Private Banking Co. previously. ‡‡Organized as a National Bank in 1875.
 ‡As Coal Men's Trust Co. ††Originally organized as Iron City Trust Co. in 1859. ‡‡Originally organized as Wylie Avenue Savings Bank in 1871.



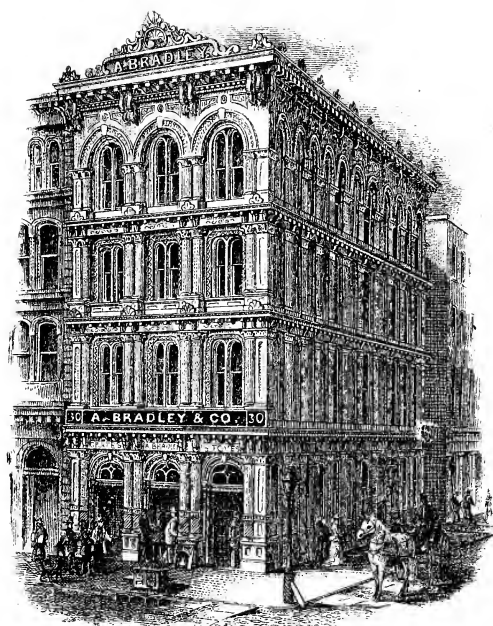
Arms, Firestone & Co. Lith.

FIRST NATIONAL BANK, COR. 5TH AVE & WOOD ST



Arms, Firestone & Co. Lith.

SOHO FURNACE



VIEW COR. WOOD STREET AND SECOND AVENUE.
STOVE WAREHOUSE OF A. BRADLEY & CO.

TABLE No. 1 OF STATE BANKS, SHOWING:

Name.	Date of Organization.	First President.	Present President.	Years in Office.	First Cashier.	Present Cashier.	Years in Office.
Bank of Pitts- burgh, . . . }	1814	Wm. Wilkins. . .	John Harper. . .	10	Alex. Johnstone, Jr. {	Wm. Roseburgh. . .	10
Arsenal, . . . }	1871	John W. Riddell. . .	S. J. Wainwright. . .	1	C. L. Staub. . .	J. A. Harper, Asst. {	—
Artisans Deposit,	1870	Wm. H. Smith. . .	Wm. H. Smith. . .	6	J. F. Stark. . .	G. C. Gerwig. . .	2
Bank of Industry,	1872	Joseph Hastings. . .	James McLain. . .	2	M. Hanrahan. . .	J. F. Stark. . .	6
City Deposit, . . .	—	J. Q. Marchand, . .	Thos. Brown. . .	—	E. A. Macrum. . .	M. Hanrahan. . .	4
Liberty Improv'mt,	1872	A. H. Gross. . .	A. H. Gross. . .	4	O. J. Parker. . .	H. C. McFarland. . .	—
Farm. & Mech. of {	1870	Geo. Duncan. . .	Jas. McMaster. . .	5	Henry F. Voigt. . .	A. M. Thorn. . .	2
East Birm'ham }	1869	Chas. W. Batchelor. .	Chas. W. Batchelor. .	7	Geo. C. McLean. . .	H. F. Voigt. . .	6
Masonic, . . . }	1876*	S. M. Kier. . .	W. W. Young. . .	—	W. W. Young. . .	Geo. C. McLean. . .	7
Lawrence, . . . }	1873	Jas. H. Hopkins. . .	Jas. H. Hopkins. . .	3	Wm. N. Riddle. . .	John Hoerr. . .	—
Penn, . . . }	1872	Geo. H. Anderson. . .	D. R. Davidson. . .	2	John D. Fraser. . .	Wm. N. Riddle. . .	3
Shoe & Leather,	1872	Jos. Walton. . .	D. Z. Brickell. . .	2	John E. Ridall. . .	John D. Fraser. . .	4
United States, . .	1872			2		John E. Ridall. . .	3

*Organized as a Savings Bank some years previously.

TABLE No. 1 OF INDIVIDUAL BANKS, SHOWING:

Name.	Date of Organization.	First President.	Present President.	Years in Office.	First Cashier.	Present Cashier.	Years in Office.
American, . . . }	1869	John Floyd. . .	John Floyd. . .	7	Wm. Floyd. . .	W. Floyd. . .	7
Central, . . . }	1868	Thos. Fawcett. . .	Thos. Fawcett. . .	8	James W. Davitt. . .	M. Hunnings. . .	1
Girard Savings, . .	1873	W. W. Martin. . .	W. W. Martin. . .	3	S. S. Bryan. . .	S. S. Bryan, . . .	3
Diamond Savings }	1869	H. M. Boyle. . .	John Hamilton. . .	—	R. B. Francis. . .	R. B. Francis. . .	7
of Allegheny, . . }	1869	E. W. Dithridge. . .	D. M. Armor. . .	—	F. E. Schenck. . .	F. C. Henry, . . .	—
Fifth Avenue, . . }	1868	Sam'l McClurken. . .	Sam'l McClurken, . .	8	D. Leet Wilson. . .	D. Leet Wilson. . .	8
Fort Pitt, . . . }	1873	Jacob H. Walter. . .	Joseph H. Gray. . .	2	Thos. H. Hunter. . .	Geo. M. Petty. . .	2½
Market, . . . }	1871	Arthur Hobson. . .	Arthur Hobson. . .	5	E. M. Jenkins. . .	C. W. Benny. . .	3½
Nations for Sav- ings, of Alleg'y }	1871			5			3½

TABLE No. 1 OF SAVINGS BANKS, SHOWING:

Name.	Date of Organization.	First President.	Present President.	Years in Office.	First Cashier, or Treasurer.	Present Cashier, or Treasurer.	Years in Office.
Anchor, . . .	1873	A. M. Brown.	A. M. Brown.	3	Jas. H. Scott.	R. J. Stoney.	1
Allegheny, . . .	—*			—			—
Dollar, . . .	1855	Geo. Albree.	James Herdman.	7	Chas. A. Colton.	Chas. A. Colton.	21
Enterprise of Alle'y, 1872		Wm. Dilworth, Jr.	Thos. J. Graff.	—	F. P. Holmes.	C. Steffen, Jr.	—
Franklin, . . .	1865	G. R. Riddle.	Geo. R. Riddle.	11	Jas. H. Riddle.	Jas. H. Riddle.	11
Freehold, . . .	1870	Edward House.	Edward House.	6	{ Thos. Steel, Treas. J. P. Speer, Cash.	Thos. Steel, Treas. J. P. Speer, Cash.	6
German Savings of Birmingham }	1871	J. P. Heisel.	John P. Heisel.	5	E. G. Scholze.	E. G. Scholze.	5
Germania, . . .	1870	C. Meyran.	C. Meyran.	6	C. M. Seibert.	C. M. Seibert.	6
Iron & Glass, . . .	1870	Thos. B. Atterbury.	Thos. B. Atterbury.	6	H. Stamm.	H. Stamm.	6
Manchester, . . .	—*			—			—
Monongahela, . . .	1872	W. Douglass.	Henry A. Weaver.	3	R. T. Hunt.	R. T. Hunt.	4
Odd Fellows, . . .	1872	Henry Lambert.	Andrew Miller.	—	W. J. Scully.	S. C. Applegate.	—
Peoples, . . .	1866	Henry Lloyd.	Henry Lloyd.	10	S. F. Von Bonnhorst.	S. F. Von Bonnhorst.	10
Peoples, Allegh'y, 1869		S. M. Hartman.	Chas. Atwell.	2	E. P. Young.	E. P. Young.	7
Pittsburgh Bank for Savings, . . . }	1862	James Park, Jr.	Geo. A. Berry.	10	D. E. McKinley.	{ Geo. C. Milnor. in May, 1876.	—
Pittsb'gh Savings, 1866		Wm. J. Kountz.	J. T. Stockdale.	6	John Birmingham.	Geo. W. Murphy.	1
Real Estate, . . .	1862	Isaac Jones.	Isaac Jones.	14	A. A. Carrier.	Geo. H. Holtzman.	5
Real Estate, Loan & Trust,* . . . }	—			—			—
South Side, . . .	1872	David Chess.	Geo. Trautman.	4	W. J. Scully.	M. Bigger.	4
Union, . . .	1872	S. G. Fleishman,	M. M. Felker.	1	Edw. Kreig.	E. Kreig.	4
United, . . .	1871	N. P. Sawyer.	N. P. Sawyer.	5	Alex. M. Guthrie.	Wm. R. Brown.	3
West End, . . .	1871	W. H. Singer.	Wm. H. Singer.	4	W. H. Wilson.	W. H. Wilson.	4
Woods Run, . . .	1871	W. J. Langfitt.	W. J. Langfitt.	5	G. C. Gerwig.	W. E. McGraw.	1
Workingmen's, . . .	1869	J. J. Herrman.	J. J. Herrman.	7	James Wettach.	Geo. L. Walter.	6

*Declined to furnish any information.

TABLE NO. 2* OF NATIONAL BANKS, SHOWING:

	Capital.	Surplus.	Dividends since Organization.	Av. Deposit Past 5 yrs.
Allegheny,	500,000	160,000	856,897	900,000
Citizens,	800,000	170,598	1,084,500	575,677
City,	200,000	4,188	44,000	250,000
Diamond,	200,000	4,000	65,325	400,000
Duquesne,	200,000**	1,000	79,156	105,000
Exchange,	1,700,000	340,000	1,881,000††	1,019,732
Farmers Deposit,	300,000	420,000	441,000	1,115,509
Fifth,	100,000	15,000	10,000	160,000
First,	750,000	114,285	1,006,750	1,900,000
First of Allegheny,	350,000	130,000	488,500	759,800
First of Birmingham, †	—	—	—	—
Fourth,	300,000	27,069	346,000	—
German of Allegheny,	200,000	4,000||	8,000	550,000
German,	250,000	156,000	588,293‡	650,000
Iron City,	400,000	320,000	815,000	700,000
Marine,	200,000	1,500	8,000	130,000
Mechanics,	500,000	300,000	1,240,090¶	—
Merchants and Manufacturers,	800,000	280,000	2,605,000	700,000
Metropolitan,	200,000	7,135	— †	— †
Peoples,	1,000,000	150,000	960,000	540,400
Pitts. Nat. B'k of Commerce,	500,000	133,000	580,000	750,000
Second,	300,000	60,000	316,500‡‡	450,000
Second of Allegheny,	150,000	82,000	190,500	350,000
Smithfield,	200,000	10,000	50,000††	250,000
Third,	500,000	145,000	651,000	630,000
Third of Allegheny,	200,000	12,000	12,000	280,000
Tradesmens,	400,000	100,000	432,000	1,000,000
Union,	250,000	200,000	297,500	664,500

TABLE NO. 2* OF INDIVIDUAL BANKS, SHOWING:

Name.	Capital.	Surplus.	Dividends.	Av. deposits past 5 years.
American,	\$200,000	—	\$142,000	\$300,000
Central,	100,000	26,000	96,000	—
Diamond Savings, of Allegh'y	90,000	—	42,365	200,000
Fifth Avenue,	100,000	13,500	51,500	171,000
Fort Pitt,	197,500	—	166,875	—
Girard Savings,	100,000	8,000	8 per cent.	80,000
Market,	100,000	5,000	20,000	—
Nation Bank for Savings,	100,000	—	16,068	62,515

‡‡Including 52,500 paid as Iron City Trust Co.

*See Table No. 1 for years in existence.

**Original capital \$100,000.

†Refused to give information.

‡Including dividends while German Trust and Savings Bank.

‡Information refused.

||Only since a National Bank.

¶\$355,000 dividends as a State Bank.

††Including Dividends while Wylie Avenue Savings Bank.

‡‡Stock dividend of 50 per cent. from surplus previous to organization as National Bank.

TABLE NO. 2* OF STATE BANKS, SHOWING:

Name.	Capital.	Surplus.	Dividends.	Av. deposits past 5 years.
Bank of Pittsburgh,	\$1,200,000	\$240,000	\$4,496,000	\$831,616
Arsenal,	50,000	12,000	25,000	180,000
Bank of Industry,	100,000	—	26,241	65,000
Artisan Deposit,	300,000	4,800	76,395	169,347
City Deposit,	100,000	—	—	—
Liberty Improvement Bank, .	100,000	5,582	—	120,000
Farm. & Mech. of Birmingham	160,000	22,000	72,000	150,000
Masonic,	200,000	25,000	114,000	425,000
Lawrence,	80,000	30,000†	72,898¶	300,000
Penn.,	250,000	5,000	62,681	375,000
Shoe and Leather,	200,000	—	43,891	150,000
United States.	100,000	6,000	Three div'd	85,000

TABLE NO. 2* OF SAVINGS BANKS, SHOWING:

Name.	Capital.	Surplus.	Dividends since organization.	Av deposits past 5 years.
Anchor,	\$100,000	\$5,000	4 paid.	\$90,000
Allegheny,	— ‡	—	—	—
Dollar,	—	—	1,979,907**	3,842,421
Enterprise, of Allegheny, . .	100,000	26,901	— †	—
Franklin,	200,000†	—	—	—
Freehold,	200,000	10,000	104,000	500,000
German, of Birmingham, . .	88,000	7,000	31,928	180,000
Germania,	150,000	—	—	592,252
Iron and Glass,	100,000	5,000	55,000	145,000
Manchester,	— ‡	—	—	—
Monongahela,	100,000	1,800	16,972||	106,000
Odd Fellows,	120,000	10,000	30,733	—
Peoples,	300,000	65,000	—	581,160
Peoples, of Allegheny, . .	100,000	18,500	53,183	175,000
Pittsburgh Savings,	300,000	27,000	127,018	400,000
Pittsburgh Bank for Savings	75,000	88,156	—	576,000
Real Estate,	—	90,510	396,322**	641,276
Real Estate, Loan & Trust Co.	— ‡	—	—	—
South Side,	200,000	—	57,253	166,500
Union,	75,000	4,000	16,819	80,000
United,	200,000	9,000	30,000	175,000
West End,	100,000††	—	—	—
Woods Run,	150,000	4,158	10,272	41,000
Workingmens,	50,000	50,000	33,500	275,000

‡Refused information.

‡Information as to surplus and dividends refused.

|| An average of \$150,000 deposits, on which 3 per cent. is paid.

**Interest dividends declared to depositors.

††Paid in \$52,000; payable in weekly installments.

†Not given.

¶Made while a savings bank previous to 1876.

*See table No. 1 for years in existence.

CHAPTER XXV.

THE PRESS OF PITTSBURGH.

On the 29th of July, 1786, the first newspaper west of the Allegheny mountains was issued in the little village of five hundred inhabitants and forty-three houses and stores, clustered around Fort Pitt; which in 1876, ninety years after, has as the community of Pittsburgh a population of 225,000, and occupies thirty-four square miles of territory. In 1786 there were no mail facilities; in 1876 one hundred and seventy passenger trains arrive and leave daily on ten different lines of railroad. With this growth has become established thirty daily, weekly and monthly publications. Eleven of these are daily newspapers, eight of which are English and three German papers. THE PITTSBURGH GAZETTE is the oldest of these, being the journal established in 1786. The chain of succession in its various proprietorships these pages afford no space to present. It is now published by KING, REED & Co., and consistent to its political record, is to-day a decided Republican journal, enjoying the confidence of the public as a commercial and general newspaper, as well as a partisan sheet. Its circulation, which is locally large, is also widely established. In the scattering of families to divers sections, household attachment to the time honored family paper has rendered it necessary in their distant homes. From the same cause the WEEKLY GAZETTE has also a wide and large circulation.

In the interval between the establishment of the Gazette and that which is the next oldest surviving paper, many brave ventures on the treacherous sea of newspaper life were launched; "but scattered wrecks lie thickly on the strand." Among those buried in the sands of time lies the *Advocate*; wont to do famous battle with N. B. Craig, and bearing many a wound from his trenchant pen. Further along is the *Commercial Journal*, which sailed so gallantly and gracefully under the guidance of Robert M. Riddle, and fought many a brave round for the old Whig cause with its fierce antagonist, the *Democratic Post*, which "still lives." Near the *Commercial Journal* lies another of its old time combatants, the *American*; "Jim Biddle's" staunch and bitter paper, which, never deserting for a day the old Whig cause, or the principle of protection to American industry, clung to its hatreds and dislikes as valiantly; unforgiving to the end.

These, and scores of others, with all their hopes and ambitions, are but the memories of a past newspaper world, with its mail coach dependencies for news, its limited circulations, and its ponderous "leaders." The GAZETTE reaching back to 1786, from 1876, represents in its files all the changes in newspaper conducting, from the "slow old coach" to the telegraphic age.

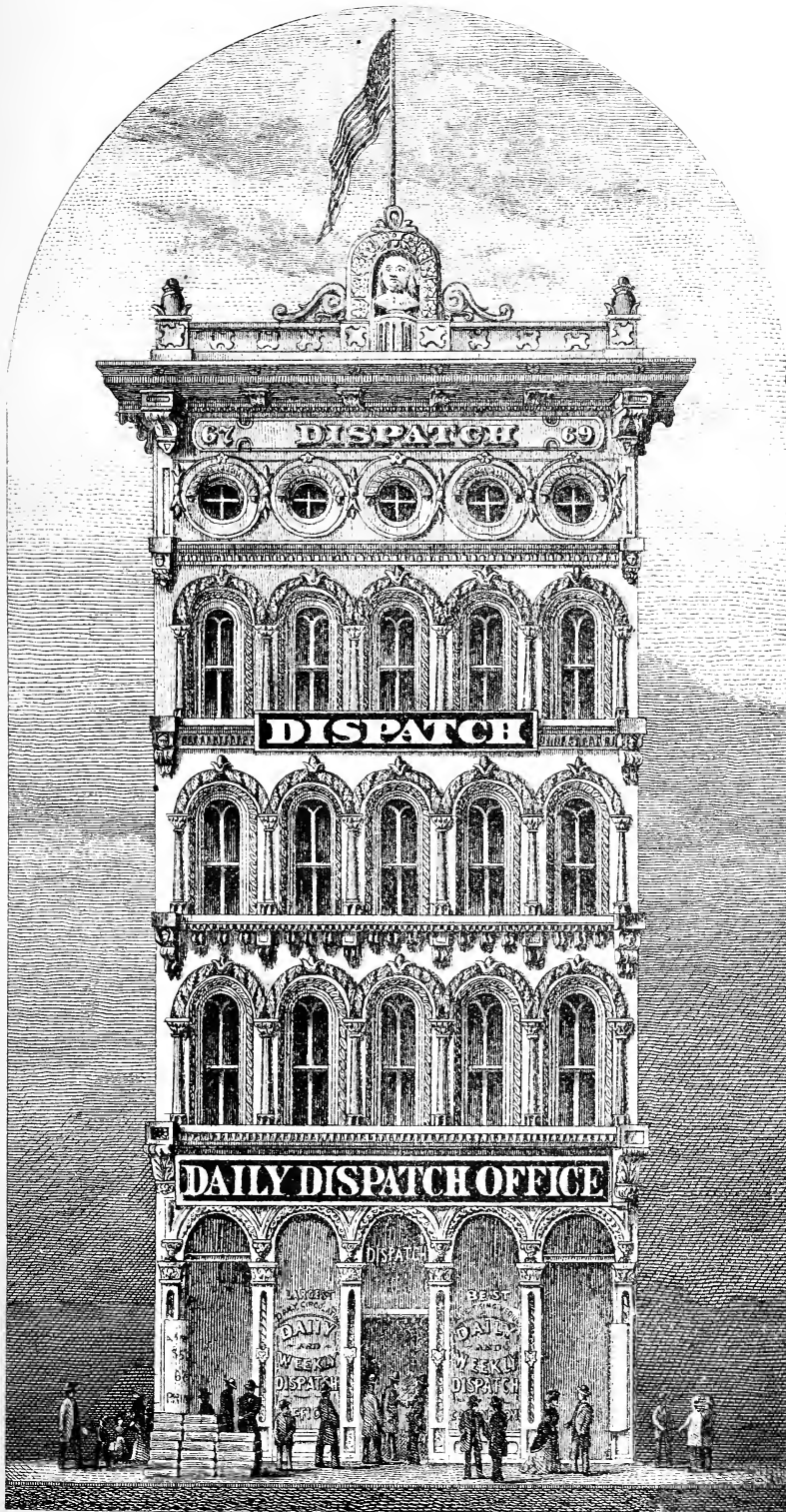
The EVENING CHRONICLE, which is the second in age of the present existing papers, was established in 1841, by R. G. Berford, as a morning paper. It is independent in politics, and is now published by Joseph G. Seibeneck, who has been connected with the paper since 1858, and became an owner therein in 1864. It was at one time owned by Jas P. Barr, now of the DAILY POST, and was changed to an evening paper in 1848; since when it has been a prosperous business enterprise; having a circulation, which varying with the excitements of the hour, averages, it is claimed, from 8 to 10,000 copies daily. Its weekly, originally called the *Iron City*, but which title was dropped years ago, has also a large circulation, going to 1,500 Post Offices.

The DAILY POST is the third in point of age in the city. It was started in 1842 by Phillips & Smith, originating from the union of two weekly papers, the *Mercury* and the *American Manufacturer*. The first paper issued in Allegheny county, pretending to be a democratic sheet, was the *Commonwealth*, published weekly by Ephriam Pentland. Of this paper the Post is the lineal successor, though of the changes twixt then and now, however interesting, this little volume can spare no space for record. The paper is now published by James P. Barr & Co. The senior of the firm, Mr. Barr, began his newspaper life as an apprentice in the office of the *American Manufacturer* in 1841, and set the first stick full of type and pulled the first sheets of the DAILY POST at its birth in 1842, and is the oldest newspaper publisher in the city now in the business. The Post has been a successful journal, being the only democratic daily in western Pennsylvania.

The DISPATCH is the fourth in point of age of the daily newspapers of Pittsburgh, and the first in point of business and circulation. It was established in 1846 by the late Col. J. H. Foster, and for several years was published as a penny paper. In 1865 the price was increased from six to fifteen cents a week, and since then it has been thrice enlarged, so that it is now one of the largest, as it is one of the most prosperous, papers in the United States. The DISPATCH is independent republican in politics, has a *bona fide* circulation of over fourteen thousand, and is owned and published by Messrs. O'Neill & Rook, who have had charge of its management for the last eleven years. The WEEKLY DISPATCH was established in 1853, and is the same size as the Daily—29x44 inches,—its circulation being about eight thousand.

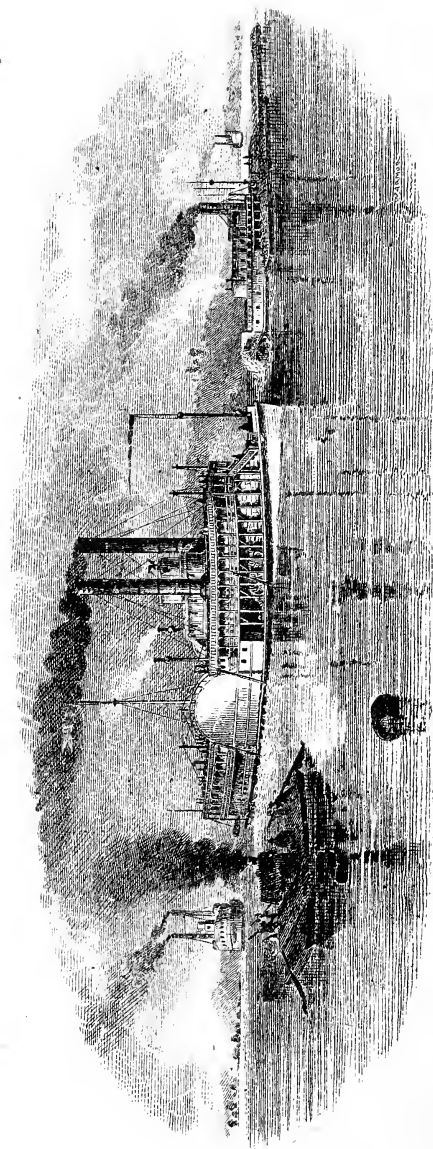
THE COMMERCIAL comes next in years, having been established in 1864 by a combination of business men of the city as a stock company, under the title of the Commercial Publishing Co. It is decidedly and uncompromisingly republican in its political character. It is also specially and largely commercial in its matter and editorial conduct, and has, as such, a large circulation, as has its flourishing weekly. The two papers are still published by the Commercial Publishing Company, although the control of the stock has changed hands.

THE EVENING MAIL, published in Allegheny city, is the next in age, having been originated as a morning penny paper.



Annex: Leach & Co. Lith.

PITTSBURGH DISPATCH BUILDING



From Pittsburgh, via Erie

RIVER VIEW NEAR PITTSBURGH.

THE EVENING LEADER, established on October 18th, 1870, by Pittock, Nevin & Co., is the next in date. This journal is the out-growth of the success of the SUNDAY LEADER which was established in December, 1864, by John W. Pittock, who afterwards associated with him R. P., John I. and E. H. Nevin, Jr., who with Mr. Pittock continue in ownership of both the SUNDAY and EVENING LEADER, conducted under the style of the Leader Publishing Co. The circulation of the SUNDAY LEADER, varying with the excitements of the day, ranges from fifteen to sixteen thousand copies, and that of the daily from twelve to fourteen thousand. Both papers are decidedly independent in character.

Of three daily German papers, the FREIHEITS FREUND is the oldest, having been established in 1834 by Henry Ruby at Chambersburg, Franklin Co. Pa., but was removed in 1837 to Pittsburgh by Victor Scriba, its then owner. The present proprietors are L. & W. Neeb, who began their publishing life as apprentices, in 1836, in the office of the paper. Lewis Neeb became a partner in the publication in 1848, and Wm. Neeb purchasing Mr. Scriba's interest in 1850. The journal was originally neutral, but in the Fremont campaign joined the republican forces where it has remained ever since. The paper has a large daily circulation of about 9,000, and a flourishing weekly besides.

THE EVENING TELEGRAPH is the latest of the daily papers established. It was first issued in 1873, and is published by a joint stock company. It has a good and growing circulation and is independent in its character.

THE VOLKSBLATT is a daily and weekly independent journal, established in 1839, by Bauer & Loew, and now published by C. F. Bauer, and claims a circulation of 2,000 copies daily, and 1,800 weekly.

THE REPUBLICANER is next in age. It was established in 1854, by a society of Germans, and is still published by the same company as a daily and weekly Democratic journal; having a circulation, of its daily, of about 2,000 copies, mostly in the city; and of its weekly of 3,600.

There are five principal weekly denominational religious papers; the oldest is the PRESBYTERIAN BANNER, which was established in July, 1814, at Chillicothe, Ohio, by the Rev. John Andrews. The office of publication was removed to Pittsburgh about 1819. Since June, 1864, it has been issued by James Allison & Co., the present publishers. It has a circulation of 12,500 copies.

THE METHODIST RECORDER is the next in age, being a continuation of the *Mutual Rights*, established at Baltimore in 1828, which was afterwards merged into the *Methodist Correspondent*, which became the METHODIST RECORDER in 1839; being then published during five years at Meadow Farm, Ohio, by the Rev. Cornelius Springer. In 1844, the place of publication was removed to Putnam, now one of the wards of the city of Zanesville, where it was issued until 1854, when it was removed to Springfield, Ohio, where it was published until 1871, and then removed to Pittsburgh, where it is published by the Methodist Board of Publication, by whom it was purchased in 1854 from the Rev. A. H. Basset, who had been the proprietor from 1844. The journal has a circulation of 7,000 copies.

The PITTSBURGH CHRISTIAN ADVOCATE, the next in age, was established in 1833, at Pittsburgh, by the Rev. Chas. Elliott, D. D. It is Methodist Episcopal in its denominational character, and its circulation is 12,500 copies.

The UNITED PRESBYTERIAN is the next in age, having been established at Pittsburgh in 1842 by the Rev. J. P. Pressly, D. D. It is now published by H. J. Murdoch & Co., and has a circulation of over 15,000 copies.

The CATHOLIC was established in 1846 by P. F. Boylan, who was succeeded in the proprietorship in 1847 by Jacob Porter, the present publisher. It is the official organ of the Diocese of Pittsburgh, Allegheny and Erie, and has a circulation of 4,000 copies.

The AMERICAN MANUFACTURER, which is published weekly, is the only paper of its class in the city, which is that of a manufacturing and metal journal. It is published by a joint stock company, and is the out-growth of the *Trade of the West*, established by Frank Woods in 1854, by whom the journal is conducted.

Y WASG is a weekly paper published in the Welsh language, established in 1873.

THE JOB PRINTING BUSINESS

Is largely carried on and is among the oldest in the city. This business, as a distinct profession, was originally started by Butler & Lamdin about 1810. The material was brought across the mountains on pack-mules; and an old Ramage press, which was part of the original outfit of the office, was, until a short time since, in existence in Butler Co. and is probably there yet. In 1825 Mr. Butler removed the office to Ravenna, Ohio, his partner Mr. Lamdin having died. In 1827 Mr. Butler returned with his office to Pittsburgh, and the office of A. A. ANDERSON & SON, at which this volume is printed, is the direct continuation of it, some of the old material being still in its composing rooms. The senior partner of the present firm, A. A. ANDERSON, began his apprenticeship to the printing business in the office in Ravenna on the 8th day of August, 1825, and has been in continuous service as boy, journeyman and proprietor ever since, a period of almost fifty-one years, and is to-day the oldest job printer in business in the city, and the office is semi-centennial in its history. In 1816 Eichbaum & Johnston established a printing office from which three others of the principal job printing firms of the city have sprung. That of Stevenson & Foster is the direct succession of W. S. Haven, who succeeded Johnston & Stockton, who were the successors of Eichbaum & Johnston. The firm of Wm. G. Johnston & Co., the partners of which are the sons of the Eichbaum & Johnston, of 1816, and S. Reed Johnston & Co., which firm is an out-growth of Wm. G. Johnston & Co., and the Mr. Johnston a son of the Samuel R. Johnston of 1816. There are thirty job printing offices in the city who employ about 175 hands and pay about \$75,000 a year in wages.

CHAPTER XXVI.

BENEVOLENT INSTITUTIONS OF PITTSBURGH AND ALLEGHENY.

In the prosperity that Pittsburgh has enjoyed, her heart has not been hardened to the needs of the unfortunate. In the absorptions of business, the building of costly bank edifices, the erection of huge furnaces and extensive workshops, her people have not forgotten the needy, nor the din of her machinery or the thunder of her hammers deadened her ear to the cry of the sick and distressed. In addition to many minor charities there are 15 prominent benevolent institutions in Pittsburgh and Allegheny. Chief among these, from its magnitude, as well as from its imposing and complete buildings for the Insane, is the WESTERN PENNSYLVANIA HOSPITAL. This magnificent charity originated on the 9th day of March, 1847, when a number of the citizens formed themselves into an association for the purpose of founding an hospital for the reception and cure of the "insane and afflicted, as well as the sick, helpless and infirm." The charter was approved the 18th day of March, 1848. A generous donation of twenty-four acres of land, in the now Twelfth Ward of the City of Pittsburgh, by Mrs. Elizabeth Denny and Mrs. Mary Schenley, enabled the managers to at once proceed with the erection of the hospital building, which was opened in January, 1853.

Primarily designed as a hospital for persons receiving accidental injuries in the manufactories of Pittsburgh, only temporary arrangements were made for the insane, but in the first year twenty-four insane persons were admitted, of whom seventeen were entirely restored to sanity. Under an increasing demand upon the hospital for the treatment of insane persons the facts were laid before the Legislature, and on May 8, 1855, a supplementary act was passed appropriating ten thousand dollars to aid in extending the accommodations. On the 19th of March, 1856, a further supplement was approved, granting a further sum of twenty thousand dollars for additional buildings. As the institution increased in the number of its insane inmates the managers determined to erect a separate building beyond the limits of the city. A selection was made of a farm on the right bank of the Ohio, seven miles below the city. Additional land was subsequently purchased and the property now embraces three hundred and twenty acres, accessible by river or rail. The domain was named "Dixmont" in honor of Miss D. L. Dix. The location is an admirable one. At the base of an abrupt wooded cliff, the Pittsburgh, Fort Wayne and Chicago Railway extends 2800 feet, along the property. From the base of this cliff orchard, garden and pasture

land rises to a summit of four hundred and fifty feet, crowned with forest trees. Midway up the slope stands an imposing structure, from whence an extensive and picturesque prospect is obtained. The entire edifice, grounds and appurtenances have cost \$700,000. The buildings, furnishing and appurtenances of the Twelfth Ward Hospital building adds to this sum \$100,000, being about \$800,000 in all without the Twelfth Ward grounds, which is valued at about \$200,000.

The buildings were open November 11, 1861, and a few days after 113 patients were removed from the hospital buildings in the Twelfth ward, and the institution began its office of humanity. At the outbreak of the civil war, the managers of the Western Pennsylvania Hospital tendered the use of the Twelfth Ward Hospital building to the government. It was accepted and placed in charge of government officers. Nearly one thousand sick and wounded soldiers were accommodated in the building and temporary outside arrangement. The tender of this costly property to the government was without expectation of remuneration, and none has ever been asked. By means of a fund received from a sanitary fair, mentioned in the chapter on the military record of Pittsburgh, the institution still remains open for the care of disabled volunteers. It is also still open for surgical and medical uses to the public as a general hospital, having a full staff of surgeons and physicians, with a thorough and complete corps of superintendents and nurses and other assistants. Further mention of this noble public charity is restricted by the limits of the volume, which has already much overrun its proposed pages.

THE PITTSBURGH INFIRMARY, corner of Roberts and Reed streets, is another institution for the sick and suffering. It is to a great extent the results of the personal exertions of Rev. W. A. Passavant. It was established in January, 1848, and chartered by the State in 1850, and has accommodations for forty-five patients. Indigent persons are admitted gratuitously, the object being to relieve the indigent sick, without reference to color, creed or country.

THE HOMŒOPATHIC HOSPITAL, situated on Second avenue, is another of this class of charities that the liberality of the citizens of Pittsburgh has called into useful existence. As its name indicates, it is in charge of a particular school of medicine. It was chartered in 1866. Patients are admitted without distinction of race or religion. A full medical and surgical staff are attached, who render gratuitous service.

THE MERCY HOSPITAL is a fourth benevolent institution of this class. It is in charge of the Sisters of Mercy, and was chartered in 1848. Patients are admitted without distinction of race or creed. Those whose circumstances will admit, are required to pay a small sum—all others admitted free.

There are several "Homes," so-called, for various various classes of persons. THE HOME FOR THE FRIENDLESS, No. 32 Washington street, was organized May 1, 1861, and chartered January 4, 1862. Its object is to receive and provide for every child in distress, and to receive children whose mothers, depending upon

their labors for support, are unable to extend to their children that care which their tender years require. The institution was organized and is managed by the benevolent ladies of all denominations in the city.

ALLEGHENY WIDOW'S HOME is another institution organized and managed by benevolent ladies of Pittsburgh and Allegheny, and is designed as a refuge and a home for indigent widows.

HOME FOR AGED PROTESTANT WOMEN.—This Home is designed for such aged Protestant women as in the closing years of life find themselves bereft of means and relations and destitute of a home, yet not wholly unable, either through the kindness of friends or from some little pittance left from former competency to contribute somewhat to their own support. It was organized June 10, 1869, under the auspices of the Women's Christian Association of Pittsburgh, and was chartered by the State as an independent institution 25th March, 1871. The buildings occupied a site of five acres, donated by James Kelly, at Wilksburgh, adjoining the city line. The Home is one hundred feet long, forty feet wide, three stories high; built of brick. About \$35,000 have been expended in its erection. It is under charge of a Board, of exclusively lady managers, to whose personal exertions its successful establishment and maintenance is due.

THE HOME FOR DESTITUTE WOMEN is another benevolent institution, originating within the workings of the Women's Christian Association of Pittsburgh. It is designed and used as a temporary refuge for destitute women, and has been in existence for eight years.

BOARDING HOME FOR WORKING WOMEN is another benevolent institution which has grown from the active spirit of the Women's Christian Association of Pittsburgh. Its title indicates its object. It was organized on November 2, 1870. The buildings cost \$17,500.

THE SHELTERING ARMS is a reformatory institution, which also owes its existence to the efforts of the Women's Christian Association of Pittsburgh. Its objects are to throw a sheltering arm around those young girls, who deceived and betrayed, would abandon themselves to a vicious life, and also to reclaim such women as, having strayed from the habits of a correct and virtuous life, desire to abandon evil ways. Attached to this institution is an "*Hospital for Incurables*," where women in destitute circumstances, suffering from dropsy, consumption or like incurable diseases may find care and attention. A further object being to furnish to such women as have sought its protection in their shame, or as a help in their efforts to reform, employment in the care of the sick; whereby not only the influence of the suffering they thus daily see and help to alleviate, may impress their minds to the purifying of their lives, but give them the opportunity to acquire a profession that will enable them to earn a sufficient livelihood, and regain their own self-respect in the consciousness of well-doing, and laboring in an honorable if humble profession.

The institution occupies a site in Wilksburg of five acres, donated by James Kelly. The buildings were dedicated in October, 1872, and when fully completed, will cost about \$40,000. At present only one wing is built, which cost, with the furnishing, \$20,337. The institution is under the charge of a board of ladies.

HOME OF INDUSTRY.—This is an institution under charge of the Sisters of Mercy, its object being to afford shelter to poor and friendless girls in the city and aid them in procuring situations.

HOME OF THE LITTLE SISTERS OF THE POOR, is also a home under charge of the Sisters of Mercy, and is designed for the care of the aged of both sexes.

ORPHAN ASYLUMS.—Of these there are three. Two under the charge of the Sisters of Mercy, and one under the benevolent ladies of both cities; the details of which the limits of this volume restrains mention. It is thus of many other benevolent associations that exist in the city, and carry their good works and the light of their christian labors into the dark places that exist in all great cities. In their organization, their labors, and all the details of their work and existence, pages would be occupied. Greatly as the preceding pages show that the Iron City has grown in wealth, in manufacturing, and all the accompaniments of a thriving business center, yet christian charity has walked hand in hand with, and strengthened with her strength and spread with her increase. Where in 1784 it was stated there did not exist either church nor chapel, nor priest of any persuasion, there are now eleven Baptist churches, forty-seven Roman Catholic churches and chapels, forty-five Presbyterian, forty-four Methodists, twelve Episcopalian, twenty Lutheran churches, three Jewish synagogues, one Universalist, two Congregational, one Swedenborgian church, and six of various other denominations, being in all one hundred and ninety-two churches. There are also thirty-five Masonic, seventy-eight Odd Fellows, eleven Red Men, thirty-seven Knights of Pythias, and twenty-one United Workingmen lodges, being one hundred and eighty-two secret benevolent associations in these five Orders, with half as many more in less prominent and known Orders. Forty-six public schools and a High School, spread intelligence among the growing generations of the mass of busy people who populate the two cities.

There is in the foregoing exhibit of Pittsburgh and Allegheny in the Centennial year much which might have been perhaps more fully and better presented. The attainment of statistical information is, under the most favorable circumstances, a labor of vexations and perplexities, and beset with many liabilities to error. In a *reticent city* like Pittsburgh such impediments are multiplied. Much as has been said of the Birmingham of America, much remains unsaid from the difficulty of obtaining and delay in giving the information

necessary, and also by that which has already been presented greatly overrunning the proposed limit within which it was expected the story of the growth of Pittsburgh and Allegheny cities, and their business, could be told. The area occupied by the two cities is equal to thirty-four square miles, or 22,000 acres, extending up the Allegheny river five miles, and up the Monongahela river about eight miles, and down the Ohio river about three miles. The distance between the rivers is about five miles. This in its bulk of territory, is what is popularly and generally known as Pittsburgh, and its population in 1876 is about 225,000. It has 400 miles of streets, and the two rivers are spanned by eleven bridges, whose aggregate length is about three and a half miles.

Throughout all these miles of streets are scattered the factories, the furnaces, the mills, and workshops, which have originated for Pittsburgh the sobriquet of the Birmingham of America. What those establishments are in detail is generally shown in the preceding pages; what they aggregate in bulk is best shown by stating that if they were placed in a compact form they would form a body or would occupy a space of 1,867 acres, or extend 77 miles, giving each an average space of 200 by 200 feet.

The packages in which the glass produced in her factories is packed, if placed in compact shape in a row six feet high by three broad, would extend over ninety miles each year, and the straw used to pack it would need 2,000 acres of ground to grow it on annually.

The barges and tow boats used to transport her yearly product of coal taken out of the Monongahela river alone, would, if placed in a continuous line, form a walk of fifty miles, while to transport the whole product of her mines by rail would require over 3,000 miles of cars, each holding ten tons. The lumber used in her sash, door and box factories and planing mills, would build a board walk each year ten feet broad and one thousand miles long.

The wages annually paid in the factories and collieries would require one man 4,133 hours, or 172 days, to count it in single dollars, at the rate of 120 a minute, and would pave with silver half dollars a street 40 feet wide and one mile long. These figures present, in perhaps a somewhat fanciful shape, some of the indications that determine the magnitude of the city, and convey, in connection with the statement made of the area of the city, what Pittsburgh is in bulk.

In her growth, Pittsburgh is a practical proof of the enrichment that the development of the resources of a nation creates among its people. The material which have kept her thousands of workmen busy in the past years, and built up the city that the foregoing pages show, would still be resting in the mountain's side and sleeping in the valleys breast, but for the principle of protection to American industries, from which the city of Pittsburgh, and similar developments over the country, has proceeded. The effects of this as an element of national strength was apparent during the late war, when, among other items of defense, the armor plates of the Ironsides and other ships to amount of over 2,000 tons were made at Pittsburgh by the Wayne Iron Works, and the

stoppers, weighing 10,000 pounds each, for the port holes of the iron clads built by Capt. Eads, at St. Louis, were made at the same mill. As free trade is often proposed as a remedy for the idle masses of men, whose failure during the past two or three years to earn wages is at the bottom of a great proportion of the dullness of trade, this volume cannot better conclude than by the presentation of some few figures showing how many laborers find employment in the production of one only of Pittsburgh's staples. The United States produced in 1873, among other forms of iron, 2,290,658 tons pig iron, 721,775 tons of iron rails, 980,000 tons rolled iron of other kinds.

To manufacture the 2,290,658 tons of pig metal requires two and a quarter tons of coal to each ton of pig, or 5,153,980 tons of coal. The 721,775 tons of iron rail takes 1,443,550 tons, and the 980,000 tons of rolled iron 2,352,000 tons, or in all 8,935,530 tons of coal. At a royalty of one-half cent per bushel the owner of the coal receives \$1,249,974. The proprietor of the colliery, who markets the coal, benefitting to the extent of one cent per bushel over his working expense, receives \$2,449,948. Eighty-four cents per ton is a fair average of coal miners' wages, and at this rate, \$7,499,844 is the sum the miners obtain.

Two tons of ore is the amount accepted as requisite to produce a tons of pig iron. It will then require 4,581,316 tons of ore to produce the 2,290,658 tons of pig made in 1873. Estimating the average cost of mining at one dollar and a half a ton, we have \$6,871,974 as the sum the ore miners alone obtain. To produce the amount of pig our figures give as the product of 1873, requires over two hundred and fifty such furnaces running full time. Here is an expenditure of over twenty-five millions of money. The average labor to produce a ton of pig iron from the ore being one man to each ton made, this would require 7,633 men working three hundred days each. The average wages of men employed about each furnace is \$720 each, making a total of \$5,504,835.00.

The labor of 43,040 men would be required to manufacture the 1,701,775 tons of rail and roll iron made in 1873. The average wages of the mill hands is \$750 each. Over \$32,250,000 is thus distributed. The entire distribution of wages for the mere items of ore, coal, furnaces, building and labor in the production of a similar weight of iron as in 1873, in the United States, is nearly \$130,000,000. Of this, Pittsburgh pays one-fifteenth in the distribution of wages in her furnaces and rolling mills, to say nothing of the amount to those who work the iron her mills produce into forms and condition beyond the simple pig and bar.

The entire wages paid in the manufactories of Pittsburgh are over \$30,000,000 annually; and the capital in the buildings and machinery of her factories alone, and the ground they occupy, is, as nearly as could be arrived at, \$43,216,955.

Pittsburgh is the tangible proof of the results of the development of American industry and American resources. The hum of her streets, the noise of her hammers, the shout of the escaping steam, the roar of her furnaces, and the cheerful sounds of thousands of busy men calling to their comrades in the necessary orders of their employment, continually intones Protection's Hymn—

*Protection! that the trowel's cheerful clink,
The joyous sound of busy plane and saw,
The engine's puff, the jar of carter's wheel,
Be not the land's exception, but its law,
That year on year the furnace 'mid the hills
Bid from the ore the iron sparkling run;
And farmers whistle as they count their gains
From crops yet ripening in the summer sun.

Let not again the mountain echoes sleep,
Where now the furnace roar disturbs their rest;
Nor yet, again, the pick slow rusting leave
Rich mineral hidden in the earth's rough breast;
Nor grass, now banished by the workmen's feet,
Around the forge thick springing widely spread;
Nor where the factory's spindles humming twirl
The spider silent spin his silken thread.

In lusty strength will Labor then rejoice,
Nor like a wounded giant starving die;
O'er villages, by rivers nestled down,
The factory's towering smoke obscure the sky.
Then Plenty 'll still the laborer's cottage bless,
The strong mechanic's home with comforts fill,
Enrich the farmer 'mid his fields and flocks,
The mealy miller in his dusty mill.

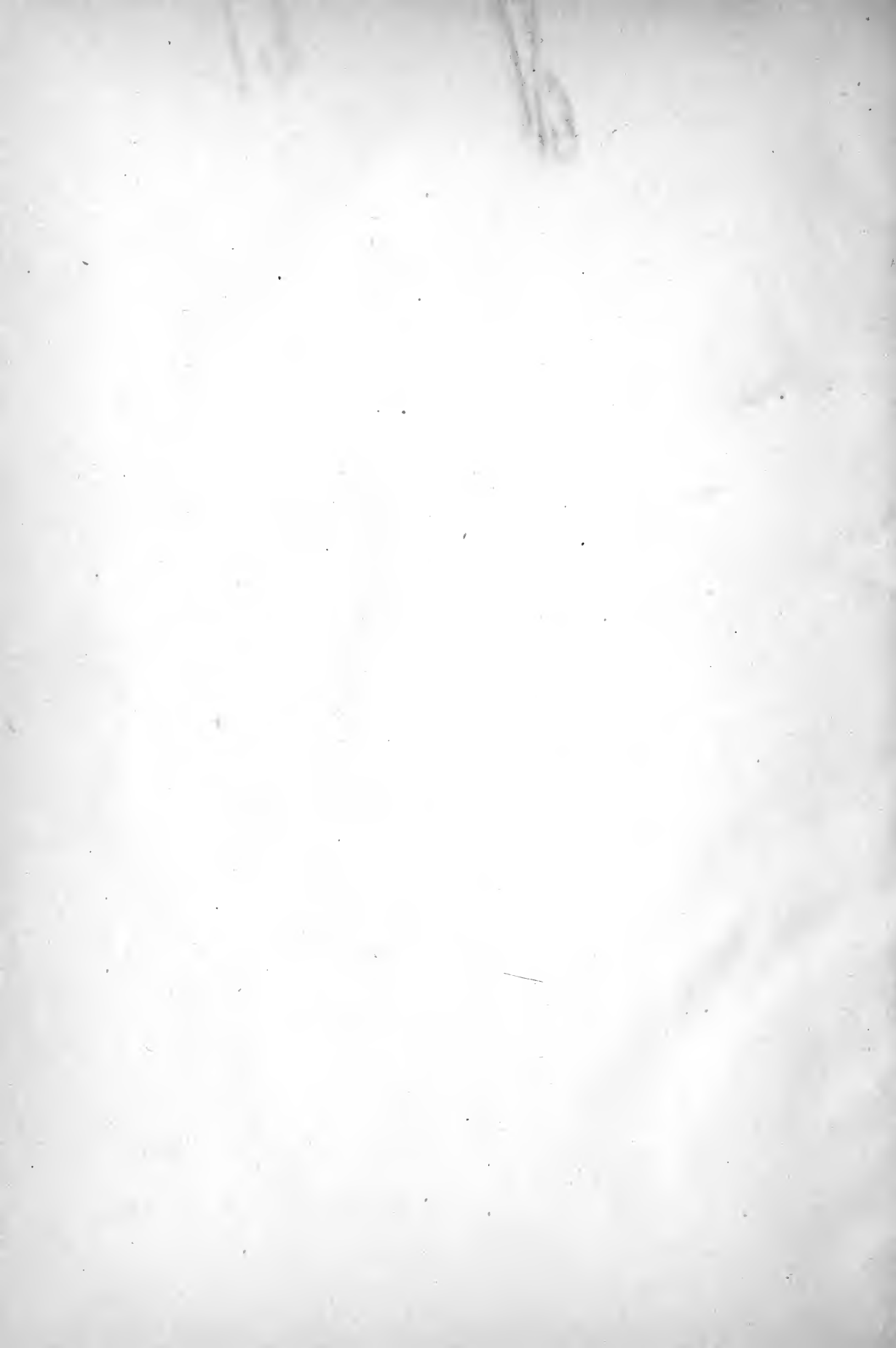
Still 'mid the mountains let the furnace roar,
Sing the deep bass of Labour's holy hymn;
The ringing anvil, hum of toil, tell how
Protection gives the workmen's sinews *vim*.
Still through our factories' long and windowed rooms
Let fair girls tend their looms with busy feet;
So shall the nation strengthen by its arts,
While Plenty dances to the hammer's beat.

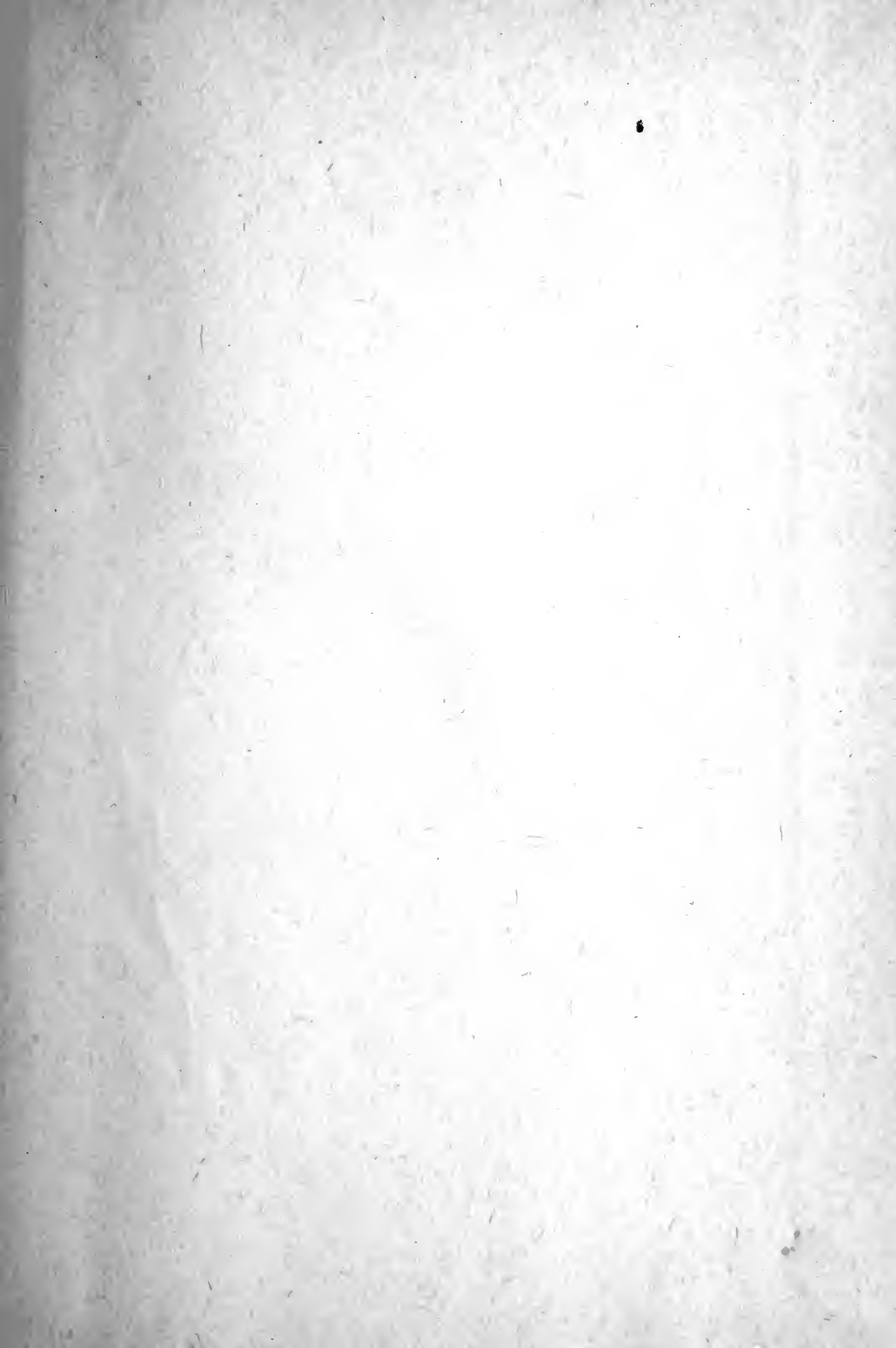
Let sunny France's dark-eyed daughters use
The shining silks her subtle looms prepare;
Let England, with her skillful woven stuffs,
Make all her graceful daughters yet more fair,
And forge her iron into guns and swords
To aid her drums around the world to beat;
We fear her iron only when in peace
It keeps our workmen idle in the street.

*By Geo. H. Thurston.

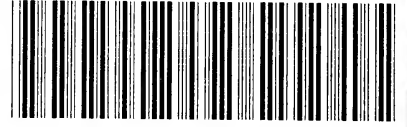
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